

NEW ZEALAND POPULATION REVIEW

Volume 42
2016

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ISSN 0111-199X (Print)

ISSN 1179-8149 (Online)

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Editors' Note

This 2016 issue marks the beginning of a new era for *New Zealand Population Review* as we shift to a fully digital format. From now on NZPR will be available for download on the Population Association of New Zealand website immediately upon publication (issues were previously uploaded to the website a year after publication), as well as through subscription-based databases such as ProQuest and EBSCO. The shift from a hard copy format will allow us to focus our time and efforts on ensuring wider and more timely distribution; better communication around upcoming content, for example, through table of contents alerts, and a streamlined online submission process. Moving forward, it is likely that NZPR will continue to go through a refresh process that includes new editorial staff, a more diverse range of contributors, and a broader inter-disciplinary focus on population issues.

This issue offers an eclectic range of papers from long-time contributors as well as new and emerging researchers who focus on population issues in Aotearoa/New Zealand and the Pacific.

Robert Didham uses data from the world-leading New Zealand Linked Census project to examine individuals' changing patterns of ethnic identification in the Census between 1981 and 2013. Understanding the nature of these complex changes is essential for undertaking ethnic projections and estimations, but also provides insight into broader societal changes. Ian Pool's paper grapples with complex issues relating to population replacement and decline in Aotearoa/New Zealand, and considers the range of potential policy responses. The focus on population policy is continued in a paper by Rachael McMillan, which examines policy responses to depopulation in eight OECD countries including Aotearoa/NZ. Her paper was the winner of the 2015 Statistics New Zealand Jacoby Prize.

Turning to the Pacific, the paper by Richard Bedford and his colleagues focuses on population change and migration in Kiribati and Tuvalu, and explores some hypothetical scenarios in the context of climate

change. The substantive section concludes with a research note from Bryndl Hohmann-Marriott which uses data from the *Growing up in New Zealand* longitudinal study to look at the characteristics of first time mothers of advanced age (35 years and older).

We also remember the major contributions made by two of our colleagues, Andrew Trlin, who passed away in late 2014, and John (Jack) Caldwell, who passed away this year. In a piece entitled 'An immigrant at heart', Phillip Morrison pays tribute to Andrew Trlin as a great 'scholar, writer and raconteur', and reflects on Andrew's work on immigration and settlement, immigration policy, fertility and race relations and the history of Croatian settlement in New Zealand. Ian Pool also reflects on the major contributions that John made to the field of demography, which included raising the profile of Oceania within the international demographic community.

The issue concludes with a review of Ian Pool's book, *Colonization and development in New Zealand between 1769 and 1900: The seeds of Rangiatea*, published by Springer.

Ward Friesen
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December 2016.

An Immigrant at Heart: Andrew Trlin

PHILIP S. MORRISON*

Abstract

There were few academics more closely associated with research on immigration and population policy in New Zealand than Andrew (Andy) Trlin. A scholar, writer and raconteur, Andrew's impressive output of academic papers, reports and submissions is testimony to a dedication and determination that has been widely appreciated by the population community in both New Zealand and abroad. In this retrospective paper, I review Andrew's work on immigration and settlement, immigration policy, fertility and race relations in addition to his meticulous research into the history Croatian settlement in New Zealand. The review contains a full bibliography of Andrew's sole and co-authored publications.

Andrew Trlin was well known to many readers of this journal and to the wider demographic and migration research community.¹ His ebullient and forthright manner belied a very careful and thorough scholar whose work has enriched our collective understanding of New Zealand society, particularly of what it means to have arrived in New Zealand as an immigrant.

Andrew has left us with a legacy of 136 publications written over a period of 45 years (1967 to 2012) that covered immigration, settlement, demography and race relations. While this article will discuss his contribution under those four headings, Andrew's interests spilled over into health issues including mental health, social work and housing. His impact was not confined to print, of course. He taught thousands of undergraduates in both geography and sociology, supervised numerous PhDs, presented at a wide range of conferences both in New Zealand and overseas, and served on several professional bodies and government organisations. To Massey University, he devoted his professional life.

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Background

To gain an appreciation of Andrews's research we have to start with the decision of his parents to emigrate from the then Yugoslavia to New Zealand.² Andrew's father, Mate Trlin, was born in 1908 and came to New Zealand in 1924 to work in the gum fields. His mother, Ruzia, was born in 1915 and came to New Zealand in 1939. They were both born in Ravca, a tiny village near the larger town of Vrgorac. Andrew's father later left the gum fields and went to Sydney to join his sister, where he ran a little tobacconist on Circular Quay. Andrew's mother was en route to New Zealand and met Mate during her stopover.

Like so many New Zealanders who were born to immigrant parents, Andrew was subject to the full range of economic and social challenges but also to a rich body of stories and anecdotes about a land far away that they still called "home". Andrew was born in Auckland in 1942 and his early years were spent within a close Yugoslav community, so much so that he did not learn to speak English until he was five years old. (Both his parents learned most of their English in New Zealand). Such an upbringing had a profound effect on what Andrew chose to research as a young adult. Like many second-generation immigrants, he felt a need to search for an understanding of his family's journey and their experiences in encountering a new land. From this came a deep commitment to work for a deeper understanding by all New Zealanders of what it means to be an immigrant in Aotearoa/New Zealand.

Andrew's parents moved to Wellington to go into partnership with his mother's brother who had set up a business in Petone called The Dominion Café. It had a fish and chip shop out the front and a restaurant behind. A large part of their clientele were the Gear Meat workers, and Andrew and his sisters were expected to work in the shop, wash dishes and wait on tables.

Andrew attended Petone Primary School, Hutt Valley Memorial Technical College and Hutt Valley High School. He went on to study geography at Victoria University of Wellington and graduated with a BA Honours in 1965. His potential was recognised and Andrew was encouraged to write a master's thesis by the newly appointed geographer Terry McGee (McGee, 2007). Terry was instrumental in introducing Andrew to Professor Charles Price, whose book on *Southern Europeans in*

Australia had a profound influence on Andrew's thinking and future direction. He subsequently spent time with Professor Price at the Australian National University (ANU) in Canberra. Andrew's thesis carried the title *From Dalmatia to New Zealand* and was awarded a distinction by Victoria University of Wellington in 1967. This research set the base for Andrew's academic career.

Andrew was soon offered a position as a junior lecturer in the Department of Geography at Massey University, Palmerston North, which he took up in January 1967. (He completed a Diploma in Teaching in the same year). He was subsequently promoted to lecturer in 1969. He taught Population Geography at second year and offered an honours level paper. He also taught the Geography of Eastern Europe as well as Introductory Geography.

In January 1972, after five years in the Department of Geography, he switched next door into the Department of Sociology, headed by a newly appointed Professor Graeme Fraser. Andrew became a senior lecturer in 1975 and a reader in 1985. He was appointed to the position of associate professor in 1992, and he served in what subsequently became the School of Sociology and Social Policy and Social Work until his retirement from full-time employment in April 2004.

The move from geography to sociology allowed Andrew to develop his interest in demography, to which he was to make an important contribution. In sociology, Andrew taught Social Demography, and Population and Society, and he wrote the text *Social welfare and New Zealand society* (Trlin 1977e). Within sociology, Andrew taught Race and Ethnic Relations and shared the teaching of research methods with Peter Perry.

Andrew was able to take up three visiting positions during his career. The first was as Visiting Fellow in the Department of Demography, Australian National University, Canberra, in 1974–1975, and he returned there for a second fellowship in 1982. His third visiting fellowship was in 1996, at the International Institute of Social Sciences, University of Edinburgh.

Immigration and Settlement

The immediate story Andrew wanted to tell was about “Yugoslav settlement in New Zealand, 1890–1961”, which he did succinctly in his 1968 *New Zealand Geographer* article (Trlin 1968b). The paper cemented Andrew’s reputation as a scholar with an eye for both the main story and the detail, which made his writing highly readable. The paper was the forerunner of the book that was to be a defining contribution to the history of Yugoslavs in New Zealand (Trlin, 1979b).

It was not difficult at that time to see the influence of one of Andrew’s most influential mentors, Professor Harvey Franklin.³ It was quite evident, for example, in Andrew’s description of Dalmatia as “a technologically backward, peasant society, almost completely committed to subsistence agriculture”. Like so many other immigrants’ backgrounds, it was the limited potential of their homeland to provide a livelihood for a new generation that led Andrew’s parents to settle in New Zealand.

The touchstone of Andrew’s concern was the prevailing view that:

...an immigrant became *assimilated* only when he quickly became indistinguishable from his host society – accepting all its rights and duties, its language, customs and values, simultaneously cutting legal, political and social ties with his home country. In brief, a one-way process of adjustment by immigrant into complete cultural conformity. (Trlin, 1967, 27)

Having grown up in an immigrant family as part of a strong wider Yugoslavian community, Andrew was well aware of the deep flaws in such views. Later, as a scholar, he was in a position to articulate the damage they wrought and to point out to a poorly informed host society of the consequences of assimilation. To a large extent, Andrew’s writing throughout his career reflected that mission.

Highly sensitive to the way immigrants were portrayed in New Zealand, Andrew saw in the reported relationship between immigrants and crime an opportunity to expose the subtle and not-so-subtle misrepresentation of the immigrant. In what he termed “some preliminary observations”, Andrew meticulously unpicked the Magistrate Court statistics in search for the evidence that might have supported a less-biased account. He found that the popular association between immigrants

and crime had less and less empirical support as the post-war period unfolded:

Perhaps one reason for such reports specifying ethnic or racial origin lies in the ready acceptance of the theory that our social difficulties are *not* to be charged to our own mistakes and failures; a theory sustained by one of the most controversial and persistent beliefs (generally unfounded) about immigrants, that they commit a disproportionately high number of crimes. (Trlin, 1968a, 27)

His paper ends by reminding his late 1960s audience that “cultural integration is a process of adjustment by *both* the immigrant group and the host society” (Ibid p. 33, my emphasis). Andrew revisited this topic again in the early 1970s (Trlin, 1973c). Two other articles from the same period foreshadowed a lifelong concern with immigration policy and what it meant to be an immigrant (Trlin, 1969a, 1969b).

It was while teaching at Massey University that Andrew wrote his PhD, entitled *Immigrants in Auckland: A Contribution to Human Ecology*, which was submitted to Massey University in 1974 and conferred in 1975 (Trlin, 1975f). In 1976, Andrew received an invitation to visit Croatia and present at a symposium organised by the Institute for Migration and Nationalities in Zagreb, Croatia; he presented his paper there in his native language (Trlin, 1978b).

Andrew received two other invitations to present internationally. The first was in 1996 when he was invited by the Institute of Migration, Turku, in association with Ministry of Labour, Finland, to give a public address entitled “New Zealand’s immigration policy in the mid-1990s”. The second was to the 1997 conference on “Asian immigration and racism in Canada” hosted by the Institute of Asian Research, University of British Columbia, Vancouver, where Andrew was invited to speak on “Asian immigration, public attitudes and immigration policy: patterns and responses in New Zealand”.

It was twenty years before Andrew returned to writing about Yugoslavs (Croatians) and this time it was about identity in a chapter of a book edited by S. Grief on *Immigration and National Identity* (Trlin & Tolich, 1995a). His paper on print culture was a further opportunity to discuss the Croatian context (Jelicich & Trlin, 1997b), with a translation some three years later (Jelicich & Trlin, 2000a).

The decade of the 1970s was a particularly productive period for Andrew, in spite of having a young, expanding family. Of the 35 publications he completed in the 1970s, 29 were sole authored and they appeared in an unusually wide range of high-quality social science journals. His concern for the way in which immigrants were perceived saw expression in several papers, one on social distance and assimilation in *Pacific Viewpoint* (Trlin, 1971c), and another on attitudes towards Western Samoan immigrants in the *Australian Quarterly* (Trlin, 1972). A co-authored paper with Ron Johnston on attitudes towards migrants was published in the *Australian Journal of Psychology* (Trlin & Johnston, 1973e). This paper used responses to a random sample of 317 registered voters in Auckland who were asked to identify preferred migrants from 14 birthplace groups using Bogardus's Social Distance Scale. The analysis revealed a clear separation of "white/non-white", an implicit status differentiation on the basis of race that did "not augur well for the probable progress of inter-group relationships in New Zealand's 'multi-racial' society" (Trlin & Johnston, 1973e, 187).

Andrew's work had begun to embrace a number of other immigrant groups including Niueans, whom he wrote about in *The Journal of the Polynesian Society* with geography colleague Cros Walsh (Walsh & Trlin, 1973f). He conducted a factorial ecology on the Dutch in Auckland, which was published in *The New Zealand Geographer* (Trlin, 1975d), and he documented their residential movement in *International Migration* (Trlin, 1976b). In that paper he drew on the Aliens and Naturalisation Registers administered by the Department of Internal Affairs which gave him access to date of arrival, age, sex, marital status, birthplace and residential changes of 968 Dutch arrivals (16 years of age and over) between 1960 and 1967 who resided in the Auckland urban area. Not eligible for state housing, Dutch settlers' locational decisions were driven primarily by the "availability of low-cost private family dwellings" on the expanding fringes of suburban Auckland. Chain migration and demographics propelled the Dutch to the periphery, in contrast to class and ethnicity that confined Māori and Pacific Islanders to the inner city. One model clearly did not fit all.

Andrew also undertook a factorial ecology of Samoan immigrants, which he published in *Australian and New Zealand Journal of Sociology* (Trlin, 1977d), an application that fostered some debate with contemporary

sociologists (Trlin, 1978a). He also undertook a study of Western Samoan marriage patterns for *The Journal of the Polynesian Society* (Trlin, 1975e) which was a theme he had addressed earlier in his study of birthplaces and intermarriage (Trlin, 1971a).

During his time in the Department of Geography at Massey, Andrew played the major role in assembling and editing papers for three monographs: *Immigrants in New Zealand* (with Keith Thomson), in which he contributed a chapter on “The Yugoslavs” (Trlin, 1970c); *Population Patterns in the Manawatu* (Trlin, 1971b); and a third that addressed a variety of themes dealing with urban growth (Thompson & Trlin, 1973b). His move to the Department of Sociology freed Andrew to expand into demography.

Demography

Andrew’s earliest demography paper was a review of abortion in New Zealand for the *Australian Journal of Social Issues* (Trlin, 1975b). He published a paper for the *Journal of Biosocial Science* (with a colleague at ANU) entitled “Non-marital pregnancies and ex-nuptial births in New Zealand” (Trlin & Ruzicka, 1977a, and a rejoinder in 1978d). He had an opportunity to more fully explore issues of fertility in his work with Massey colleague Peter Perry in a special report for the Department of Health called the *Manawatu Family Growth Study* (Trlin and Perry, 1981a). Among the topics he covered was the use of the long-acting contraceptive Depo-Provera, breastfeeding, side effects of oral contraceptive use, and premarital sex including contraceptive knowledge, attitudes towards sex roles and anticipated family size, and the role of maternal employment. These papers were all published between 1981 and 1984, with the last of them addressing socio-demographic factors associated with breastfeeding (Perry & Trlin, 1985b).

Not confined to issues around fertility, Andrew was one of a number of academics who drew the public’s attention to the social dimensions of health and disease in an effort to extend our understanding of the epidemiological transition (Trlin, 1994a), notably as a co-author of a broader coverage of the same theme (Spicer, Trlin, & Walton, 1994b). It was a logical step towards an evaluation of alcohol and drug education (Jakob-Hoff & Trlin, 1995b, 1996a) and risk implementation in the case of

CYPFS (Jakob-Hoff, Coggan, & Trlin, 1998a). Further evaluations under the same consultancy followed in the late 1990s. Women's employment and family size are interlinked, of course, and it was not surprising to find Andrew involved in a number of debates over this relationship (Khoo, Krishnamoorthy, & Trlin, 1984a, 1984b).

Race relations

The 1970s saw the beginning of several papers that Andrew was to write on a topic that shared many parallels with attitudes to immigrants – race relations. This theme goes back to his very earliest writing which appeared in the journal *Te Maori*: “Attitudes and policies towards immigration” (Trlin, 1969a), “Maori and Pakeha in Patea” (Trlin, 1970a) and “Those strangers – our neighbours” in *Comment* (Trlin, 1969b). Both *Te Maori* and *Comment* were widely read publications at the time. The same themes were to surface at the end of the decade as a chapter entitled “Race ethnicity and society” in Neville and O'Neill's well known *The Population of New Zealand* (Trlin, 1979c) and his *Comment* article which drew the Race Relations Act to people's attention (Trlin, 1979a). The workings of this Act were articulated in *Political Science* subtitled “Conciliators, conciliation and complaints” (Trlin, 1982a). Andrew was drawn to the Australian Racial Discrimination Act in a paper for *Ethnic and Racial Studies* (Trlin, 1984c), and further detailed the nature and outcome of complaints in the *Australian Journal of Social Issues* (Trlin, 1984d). Much of this work culminated in the *International Handbook on Race and Race Relations*, which he wrote with Paul Spoonley (Trlin & Spoonley, 1987c). This set the base for his later contributions to the Human Rights Tribunal.

Immigration policy

It was a logical step from Andrew's writing on the experience of migration to writing about immigration policy itself.⁴ His initial discussion of immigration policy appeared in the first of the *Digest and Bibliographies* published by Massey University's Department of Sociology (Trlin 1986a). Always conscious of the difference between the rhetoric and the reality, Andrew asked whether entry/residence provisions, entry statistics and immigrant composition were consistent with stated responsibilities and objectives. Any affirmative answer, he cautioned, “should be qualified by

recognition of the actual or potential conflicts inherent in the range of considerations, responsibilities and objectives underlying New Zealand's immigration policy" (Trlin, 1986a, p. 18).

Many of Andrew's concerns were echoed in a comprehensive review he wrote with colleagues Bedford and Farmer in the *New Zealand Population Review* (Bedford, Farmer, & Trlin, 1987a). Concerns were further aired in the Centre of Migration Studies, East-West Population Institute, Honolulu conference proceedings (Trlin, 1987b). His writing on immigration policy increased during the 1990s as he reflected on the changes that took place in the late 1980s (Trlin, 1992c). This included a detailed case study of business immigrants from Hong Kong and Taiwan (Trlin, 1992a), and the shared links between the institutional context of immigration policy and its social effects in the *Asian and Pacific Migration Journal* (Trlin, 1993). In a further paper he explored the relationship between immigration policy and economic growth (Trlin, 1997c), and in another he addressed public attitudes towards Asian immigration (Trlin, 1998e).

While seeing benefits in the transition from selective to promotional entry rules, Andrew was again concerned about what it all meant from the perspective of the immigrants themselves. In particular:

...whether or not special immigration provisions (not necessarily for family reunification alone) should be devised and implemented to meet the needs, desires and the aspirations of immigrant communities, families and sponsors at different stages of their life cycles. The decision made, because it bears upon national identity and the qualities of citizenship, will ultimately be more important than decisions made on entry rules with an eye on the strength and structure of the nation's economy. (Trlin, 1992c, p. 25)

Many of Andrew's interests in immigration came together in the New Settlers Programme he led, supported by the Foundation for Research, Science and Technology (FRST) multi-year grant which ran from July 1997 to June 2006. His assessment with colleagues was captured in a report published out of the Third National Conference in 1997 (Trlin 1998). Another paper on Asian immigrants appeared in the proceedings of the University of Otago conference on the overseas Chinese (Henderson, 1999). Then, after a decade of writing on in-migration, Andrew found himself drawn into its counterpart: emigration (Trlin, 1980).

By the mid-1970s, Andrew and colleagues had assembled an impressive corpus of work on migration to and adjustment of immigrants in New Zealand and this resulted in a bibliography being published by the Department of Demography, Australian National University (Trlin, 1976a). This was the first of several bibliographies Andrew had a role in compiling. Under various institutions, Andrew played a leading role in four other bibliographies, which were published, along with topical papers, over a period of almost twenty years: the first in 1986, the second in 1992, the third in 1997, and the fourth in 2005.

Numerous issues were picked up in these digests; for example, unregistered immigrant doctors (North, Trlin, & Singh, 1999e), and the effects of unemployment among skilled immigrants from India (Trlin, Henderson, & North, 1999g) and among new Chinese arrivals (Trlin & Henderson, 1999). A study of the link between employment and mental health among immigrants was an important extension, resulting in a *New Zealand Journal of Psychology* publication with co-authors (Pernice, Trlin, Henderson, & North, 2000b) and later another publication on the “squandered skills” of such immigrants (Henderson, Trlin, & Watts, 2001d). Coping with immigration imposes particular demands on women and the experience of Latinas in New Zealand was addressed with co-authors in the *Women’s Studies Journal* (Rivera, Nash, & Trlin, 2000g).

When it came to researching the key issues, Andrew was in the thick of it, covering diversity as a productive resource (Watts & Trlin, 2000d, 2000e), issues around the young migrant (Watts, White, & Trlin, 2002b), the role of local authorities in meeting immigrant needs (Watts and Trlin, 2002d), the role of social workers (Nash & Trlin, 2004c; O’Donoghue, Munford, & Trlin, 2006a), self-employed immigrants (North & Trlin, 2004d), self-reported illnesses of immigrants (North, Trlin, & Henderson, 2004g), psychological well-being (Alpass, Flett, Trlin, Henderson, North, Skinner, & Wright, 2007) and health care (North, Lovell, & Trlin, 2006b), as well as the role of the media (Spoonley & Trlin, 2004f), cultural capital (Watts, White, & Trlin, 2004a, 2004b) and housing (Johnston, Trlin, Henderson, North, & Skinner 2005a). Andrew also addressed debates around skilled workers (Trlin, Henderson, & North 2004e) and, in his last published paper, the experiences skilled South Africans had of moving to New Zealand (Trlin, 2012). By the turn of the century, immigration had already spawned an industry devoted to

facilitating the process and Andrew jointly authored an evaluation (Lovelock & Trlin, 2008).

It was difficult when studying immigrants, particularly from the Pacific, not to come up against issues of social welfare, and after moving to sociology and social work, Andrew was in a good position to edit and write the introduction and conclusion to one of the first volumes of *Social welfare and New Zealand society* (Trlin 1977b, 1977c, 1977e). Andrew also contributed two chapters to this volume, the first dealing with state housing, aptly named “welfare in suburbia” (Trlin, 1977f). He later covered social work in practice (Dale & Trlin, 2007c, 2007d).

It is not difficult to understand why in the mid-1990s Andrew also began to focus on the issue of language, and he wrote a number of important papers with colleagues beginning with a review (Henderson, Trlin, Pernice, & North 1997e) and the use of immigrant language resources in international business (Watts & Trlin, 1999j). Closely related were issues around employers and company employment policy as they related to immigrants (Watts & Trlin, 1999i); the two authors also presented a paper at the *Eighth Conference on Labour, Employment and Work* (Watts & Trlin, 1999h). Several papers on English language issues further developed the argument (Watts, 2000; Watts, White, & Trlin, 2001; Watts 2001a, 2001b, 2001c; Watts, White, & Trlin, 2002c, 2000d).

Summary

One cannot but be impressed at the consistency of Andrew’s focus over the 45 years of writing covered here. With the exception of a brief period when he turned his attention to fertility issues, it has mainly been about immigrants, their experience, their concerns and their attempts to make New Zealand home without losing their cultural integrity.

Another impressive feature of Andrew’s work is what in the current jargon is referred to as “translational research” – research that aims to make findings from basic social science useful for practical applications that enhance human health and well-being. By repeatedly involving himself in contemporary issues immigrants face, Andrew and his colleagues were able to bring such issues back into the university and assemble projects that looked at the issues dispassionately and with the

intellectual rigour the academy demanded. Andrew's ability to bridge the divide between the scholar and the street was one of his greatest strengths.

Andrew also co-convened the joint conferences of the New Settlers Programme (Massey) and the Strangers in Town Programme (Waikato). Begun in the late 1990s, these conferences are now an annual fixture involving co-sponsorship with Immigration New Zealand. This was another example of Andrew's collaboration with university colleagues across a range of disciplines as well as his engagement with officials (researchers and policymakers) addressing immigration policy and migrant settlement issues.

No activity more clearly illustrates Andrew's commitment to bridging the divide between gown and town than his involvement with the Ministry of Justice's Human Rights Tribunal on which he was appointed a panel member in 2005. This gave him an opportunity to apply much of what he had learned and written about over the years to the range of cases that came before the Tribunal. Over this same period, Andrew served as an honorary research fellow with the School of Health and Social Services, Massey University, Palmerston North.

Complementing and underpinning his sympathy for the immigrant sits his early scholarship of the settlement of Yugoslav immigrants to New Zealand. It will surprise none of us to learn that Andrew was updating his book when his illness took over. New chapters were to include the fishing industry, farming communities in Northland, Oratia and South Auckland, the consequences of political developments in the "home" country 1990–1995, and the experiences and ethnic self-identification of the second generation. These additions did not come to pass, but Andrew will be remembered for the dignity and compassion he bestowed on all Croatian New Zealanders. He will also be remembered by all of us in his professional capacity as a scholar deeply committed to making a difference.

Acknowledgements

A number of people contributed generously to this account of Andrew's life and work including Richard Bedford who commented on an earlier draft. Even without asking, I know that Andrew would be only too quick to acknowledge the role his wife, Annette, played in supporting his

professional career, together with his five children, Matthew, Natasha, Alexander, Belinda and Miranda.

Andrew Trlin: bibliography

This bibliography is ordered by date of publication within each decade.

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Notes

- Andrew Trlin passed away on 17 December 2014. A tribute to his role as president of the Population Association of New Zealand (PANZ) in the early 2000s and as a council member from 1980 to 1982 and again from 1991 to 2005 appeared in an earlier issue of the *New Zealand Population Review* (Butcher, 2014). See “Other references” at end of the bibliography.

The writing of this retrospective began in early 2014. Andrew’s collected works were assembled into two big boxes and we hired VUW master’s student Rebekah Smith to enter the bibliography that appears at the end of

this paper. Several months before his passing, Andrew and I spent a very enjoyable sunny afternoon at his impressive family home on the Kapiti Coast, reminiscing about his work and career. Later in 2015, I spent time with Annette, Andrew's wife, at Victoria University discussing a draft of this paper. I wish to thank the Trlin family for the assistance they provided in gathering the material I draw on here.

- 2 After World War 2, Croatia became a founding member and federal constituent of Second Yugoslavia. In June 1991, Croatia declared independence, which came into effect on 8 October of the same year. The Croatian War of Independence was fought successfully during the four years following the declaration.
- 3 Franklin's own career was written up in Morrison and Willis (1994), following his retirement in 1993.
- 4 For a treatment of this topic in the context of British immigration, see Morrison, P. S. (2009). A demographer's demographer: Arvind Zodgekar. *New Zealand Population Review*, 35, 1–22.

Ethnic Mobility in the New Zealand Census, 1981–2013: A Preliminary Look

ROBERT DIDHAM*

Abstract

This paper describes the initial investigation of ethnic mobility observed in New Zealand census data. This research has so far focused on the most aggregated level of ethnicity and at the national level. A more detailed look at specific ethnicities and subnational diversity are dimensions in continuing research. Parts of this discussion were presented at the Population Association of New Zealand conference in Hamilton in June 2015. Some theoretical aspects of ethnic mobility, and preliminary results on national-level patterns of ethnic mobility, are covered here, based on groupings of ethnicities defined by level 1 of the 2005 Statistical Standard of Ethnicity (Statistics New Zealand, 2005). To ensure consistency across time, the data from 1981 through to 2013 are recoded to be as compatible as possible with the 2005 Standard.

Almost all areas of research, analysis and policy formulation within New Zealand, including demography, public health, medicine, nursing, education, labour market analysis, sociology, anthropology and history, involve ethnicity as a primary dimension – though not always with consistency or comparability (Didham & Callister, 2012). An understanding of the measurement of ethnicity underpins the effectiveness of this research. Yet the all too frequent assumption is that ethnicity is a static characteristic of individuals, it is objective and it is context free. None of these is true.

Ethnicity is at least in part a social and political construct. The preferred mode of collection in New Zealand is based on self-identification. There is a tendency to problematise this when it comes to the operational measurement of ethnicity. Among the factors that are implicated in people's choice of identifications are the social, political and individual

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contexts in which collection occurs. None of the actors in this process is neutral. As a consequence, people may identify themselves differently or be identified differently by others in different contexts, and ethnicity may change across time within the same collection (Callister, Didham, & Kivi, 2008; Carter, Hayward, & Blakely, 2009; Didham, 2005). Changes of this type reveal a great deal about underlying social structures connected to other demographic processes, including family formation, geographic mobility and migrant settlement. The process whereby people change their ethnic identification within or between collections is referred to as *ethnic mobility*, analogous to the term *geographic mobility* which refers to change of residential (and other types of) location, and other terms related to different types of mobility such as occupational and social mobility.

Understanding ethnic mobility is central to understanding many other aspects of the measurement of identity, all of which have significant policy implications as well as sociological and anthropological applications and processes. Ethnic mobility, for example, forms part of the process of *ethnogenesis* as emergent ethnicities struggle to find expression in collections because people tend to re-use existing or known categories in combinations in order to adequately express their identities. For this reason, boundaries can no longer be treated as reified, essentialised and immutable, either in terms of semantics or in terms of the relationship between the fields contiguous to the boundary. New terms to describe new ethnicities may enter synonym files and be coded to existing categories, obscuring the process and altering the content of the category in material ways. In some cases, this may result in the meaning of category labels changing over time.

Data Source

The census is the benchmark against which many other collections are calibrated, and forms the basis of population estimation and projection. Ethnic mobility within census is consequently of high interest. The census is also a large and robust-enough survey to provide the evidential base necessary for research, but research has been limited in the past by the lack of longitudinal linkage between censuses, which would enable direct analysis. This limitation has been noted elsewhere, too; for example, Canadian studies struggling with demographically implausible changes to indigenous and Métis populations have had to rely primarily on inferences

drawn from census snapshots (Anderson, 2014; Caron-Malenfort et al., 2014; Goldman, 2008; Guimond, 1999, 2009; Robitaille et al., 2010).

The recent development of the New Zealand Linked census, hereafter NZLC (Statistics New Zealand, 2014), provides an opportunity now to examine this aspect of census data in detail. The NZLC links adjacent censuses in pairs, so that the seven censuses from 1981 to 2013 are linked into six pairs. One of the principal incentives to develop the NZLC was the unexpected growth of New Zealand responses in ethnicity data between 2001 and 2006 (Kukutai & Didham, 2007, 2010). The early development of the NZLC drew heavily on international experiences and experiments (notably by the England and Wales (Office for National Statistics), Northern Ireland and Scotland statistical agencies). The New Zealander problem added urgency and, given the magnitude of the apparent shift in the ethnic data, it was decided that the most effective way of understanding the 'New Zealander' shift was by data linking (Brown & Gray, 2009; Didham, 2012). This paper makes use of unweighted linked records in the NZLC only. This means that any biases due to the linking process are not accounted for. In particular, people can only be linked if they are present in the previous census, so people either overseas or missed at the previous census are not linkable. This means that people who are more mobile geographically and perhaps more likely to change their ethnic identifications over time have a higher chance of not being linked than the more immobile population. One implication is that the actual level of ethnic mobility may be understated in the linked data. However, since the linking criteria are very strict, the quality of the linked data is high. Nothing can be said at this stage about the relationship between ethnic mobility as shown by linked records and ethnic mobility that may occur between unlinked records. Some inferences may be able to be drawn on this bias when current work on weighting is complete, but is not expected to materially change the results at the level presented here.

Collection of Ethnicity

The way in which ethnicity was collected and recorded changed over the period covered by the NZLC. In 1981, the data was recorded in a single flat classification which recorded single ethnicities and combinations of two in unique code numbers, with a few indicating three or more responses. For example, the code 207 is described as 'full Indian' while code 210 is

described as '3/4 Indian and 1/4 NZ Maori'. Examples of three or more responses include code 213 '1/2 Indian and two others' and code 295 'Three other ethnic origins not elsewhere included'. Although this did lead to some difficulties in producing a concordance between the 1981 classification and the 2005 classification, in practice it affected a very small proportion of the population at level 1 of the classification.

A change was made to the concept, question design and recording of ethnicity in the 1986 Census. Ethnicities were collected and recorded separately with up to three responses per person. Collection was extended to six responses per person from 2001. Despite the changes over the period covered by the NZLC, research has shown that ethnic data up to 1981 is comparable to data from 1996 onwards (Didham, 2005) and that the data can be regrouped effectively to fit the current six level 1 categories since few people gave more than two response in 1981. Detail has also been improved for some of the groupings of ethnicities, especially for ethnicities with the European group.

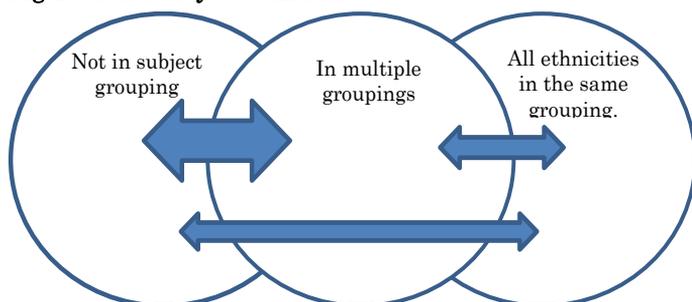
For this study, indicators were constructed for each census for each of the six level 1 categories (European, Māori, Pacific, Asian, Middle Eastern/Latin American/African (MELAA), and Other), with the indicators showing whether the person at that point in time had been recorded with an ethnicity in the grouping or not, and whether that they also had ethnicities in other groupings. At the same time, a set of level 2 indicators were constructed for the major level 2 ethnicities and groupings of ethnicities as these will be needed at a later stage of this research. For simplicity, the categories are labelled as (using Māori as an example), 'Sole Māori', 'Māori and other', 'Not Māori' and 'Not stated'.

For the purpose of this study, two sets of boundaries are applicable. First, there is the outer boundary set where a person moves from or to a grouping; for example, being in Māori in one census and not being in Māori in the next census is regarded as a loss to Māori. Note that moving from Māori to 'Not stated' is also treated as a movement for some purposes but is not regarded as ethnic mobility in this definition, but is a loss to Māori. The second set of boundaries considers whether a person moves from Sole Māori to Māori and, for example, Pacific. This gives us at least three initial primary borders: Sole Māori to/from Māori and other, Māori and other to/from not Māori, and not Māori to/from Sole Māori. Clearly this can be extended to multiple sets of boundaries to distinguish between movement

between Māori and Pacific versus movement between Māori and European to understand transitions in complex identifications. The main point is that each of these boundaries have very different porosities – movement in one direction differs from movement in the other, even allowing for factors such as relative group size. These porosities also varied over time.

Care is needed, however, to distinguish between counting and what is counted. As with geographic boundaries (Alesina, Easterly, & Matuszeski, 2006), reification of boundaries may embed fictions into the data that impede rather than illuminate analysis. There is a potential mismatch between what people are trying to tell us by their response and how it is coded and then later interpreted. This is extremely important if we are looking across a lengthy period of time when labels may adopt a very different meaning, a phenomenon that has been shown very well by the research on Métis in Canada (Anderson, 2014). It also recalls an earlier question (Bedford & Didham, 2001) on what exactly it is that someone means when they give us two ethnicities: Do they identify with two separate ethnicities simultaneously or at different times, or are they trying to express some kind of cultural amalgam of incorporating aspects of both? Where, then, does the concept of hybridity (Bhabha, 1994; Hutnyk, 2005; Papastagiardis, 2015) sit in this context? Do we have here a change representative of a transitional state between two ethnicities and emergent new ethnicity? It is clear that there is a strong relationship between how people respond and how they perceive the intended use of the data. In this context, we can see that ethnicity is not only a social construct, it is also a political construct.

Figure 1: Porosity of boundaries



Results

Māori data is used here to illustrate some aspects of ethnic mobility. The patterns for each intercensal linked pair are shown graphically in the Appendix. The data have been graphed separately for males and females and show the movement of people between each of the four categories (Sole Māori, Māori and other, Not Māori, and Not stated). What stands out is that in general the differences between the sexes is not as great as the differences between adjacent censuses. Moreover, the inflows and outflows are not symmetrical.

These graphs demonstrate that there is significant variability over time between the proportion of the population moving into and out of each of the categories. The very large flows into Māori and other from Not Māori seen in the 1981–1986 pair was primarily driven by the change in the nature of the question format. The next highest movement was from Sole Māori to Not Māori; that is, moving out of Māori altogether rather than to Māori and other. This could perhaps have been unexpected given the number of people moving into Māori and other from outside the Māori group, though much of this movement was related to changes in Pacific ethnic identifications. There was almost no inflow into Sole Māori, but notable outflows from this group, in this period.

The following period, 1986–1991, showed a much different picture. However, the proportion of the population changing between the Māori categories, at 4.5 per cent, was less than half that of the previous period (10.8 per cent). Between 1986 and 1991, the ethnic mobility among Māori was more complex, reflecting in part changes in coding practices, but the movements across the inner (Māori/Māori and other) and the outer (Māori and other/not Māori) boundaries show more complex porosities than those of the 1981–1986 period, with Sole Māori gaining also from the other categories.

The 1991–1996 period is often cited as one in which multiple ethnicity was driven by changes in the question design and that the 1996 data was aberrant. This contention is debateable. Ironically, the major feature for Māori in this period is the flight from multiple responses including Māori. By far the strongest movement for the intercensal period is the loss of people from the Māori and other category, with people going in similar proportions to both Māori only and not Māori, with females slightly more likely than males to move into Sole Māori.

Since 1996, the patterns have remained similar for each intercensal period. Each period had a similar proportion of the Māori population moving between the categories (over 5 per cent) but with increasing flows across each of the boundaries. In part, this demonstrates that following the transitional period of 1986 and 1991, the level and complexity of ethnic mobility has become less volatile for Māori.

Ethnic Population Projections

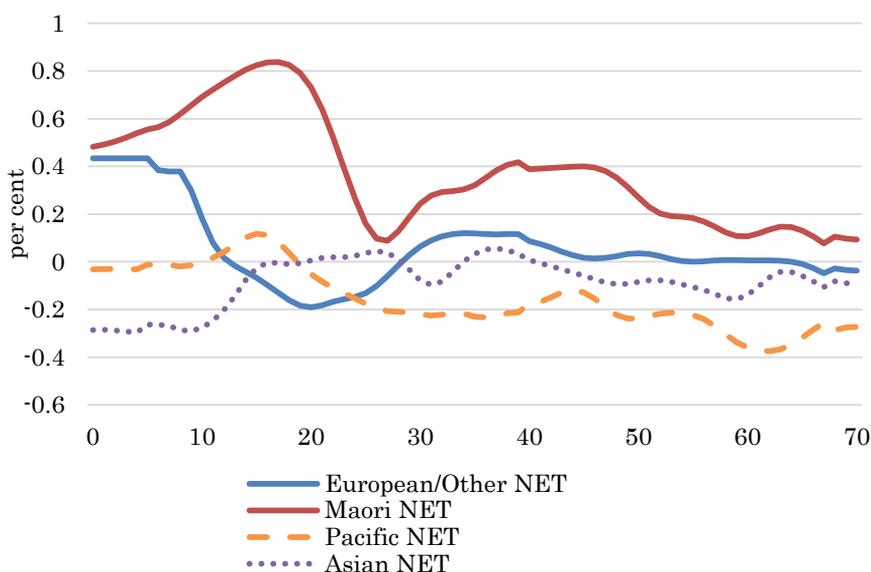
The 2015 release of the ethnic population projections was the first application in official statistics of the data on ethnic mobility derived from the NZLC. These projections made use of a subset of the work described above. For the purposes of the projections, the more recent period from 1996 was more relevant and had the most highly consistent data. The period also matched the period covered by other data sources, such as births, deaths and migration. Moreover, the projections required only the flows into and out of the level 1 groupings to derive the appropriate trajectories of change. However, projections also require averaged and smoothed rates, given the period they are designed to project. To meet this need, a set of rates of average net ethnic mobility was derived by single year of age. Because the net rates were not very different by sex, the same set of rates were used for both males and females. The same set of assumptions was also applied to subnational ethnic projections. More information and technical details are available from the reference above.

The projections combine the level 1 groupings of European and Other because the latter grouping is composed almost entirely of New Zealander responses, which are predominantly associated with New Zealand European (Brown & Gray, 2009). Projections are not done for the MELAA grouping because the population is too small and dynamic to produce robust results.

Figure 2 shows the average annual net change to the level 1 groupings of ethnicities over the period 1996–2013. This was the period where rates were more comparable across the time period, so derived trajectories of change were more predictable and less subject to volatility. The striking feature is that the Māori population has gained consistently over all ages, with inflows as high as 0.8 per cent per annum on average for the late teenagers and young adults. In general, this is not at the expense

of other groupings except, to some degree, Pacific among older adults, but rather it reflects a shift to multiple ethnic identification, especially among youth. The pattern for people of Asian ethnicities is different in that there are net losses to the grouping for those up to secondary school ages. Averaging net rates over such a volatile period of New Zealand migration history has limitations, but attempting to model the detailed variability into projected populations cannot be justified.

Figure 2: Ethnic mobility, 1996–2013 average annual percentage net change, ages 0 to 70 years



Apart from Māori, the average net rates are very small. Net rates, however, conceal some very large flows. If we compare the inflows and outflows for Māori (Figure 3), we can see first that the differences between male and female are not great for the net changes but there are noteworthy differences between males and females when we look at the gross flows. Although the net male flows are slightly smaller at all ages than the female flows, we see that, for most ages, male gross flows are larger. This would suggest that outflows and inflows are incentivised for males through the prime working ages. Furthermore, this data may actually understate the effect because of the higher level of female linkage relative to male, if the assumptions about link bias above are correct.

Whether this is driven by occupation or industry biases among the working population remains to be determined, but there are hints in the occupation data that this may be a significant factor (Didham & Nissen, 2015).

What is clear, though, is that at each age on average between 2 and 3 per cent of the Māori population changes annually, with the highest level of mobility in the young adult ages and in the older ages. For Māori, this showed an unexpected net outflow in the smaller and older cohorts beyond the age of 70 years, driven primarily by more rapidly increasing outflows than inflows. This demonstrates that for the Māori ethnic group, there is a significant and regular exchange of people. A feature seen in this and the following plots is the different ages at which the inflows and outflows occur, with subtle differences between males and females.

The Pacific population (Figure 4) has a similar pattern to the Māori pattern, though with a generally lower level of both inflow and outflow. This is expected: not only is a significant proportion of each population common to the other, because of multiple ethnic identifications, but both populations are similarly urbanised and have similar socio-economic profiles. Around two-thirds of the Pacific population is New Zealand born, with some communities within this population approaching 90 per cent born in New Zealand. However, there are important differences between Māori and the Pacific communities which remain to be explored, especially when ethnic mobility across the internal boundaries within the groupings is considered.

Figure 3: Māori ethnic mobility, 1996–2013 average annual percentage gross flows and net change, ages 0 to 70 years

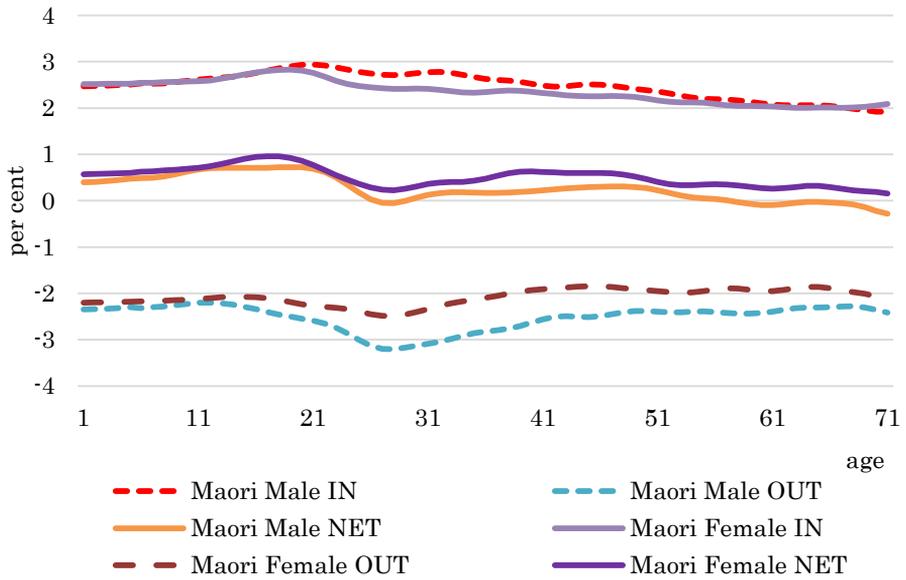
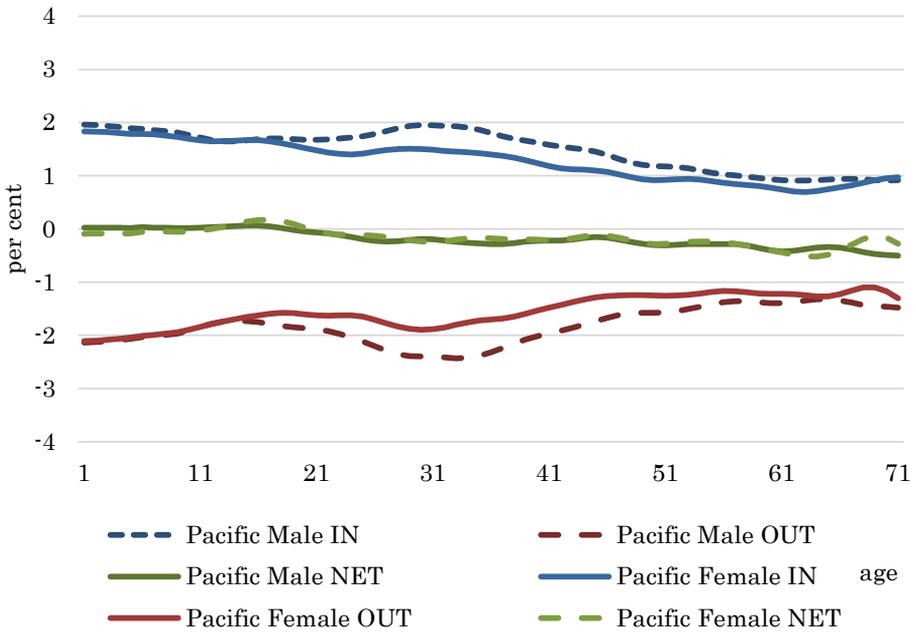
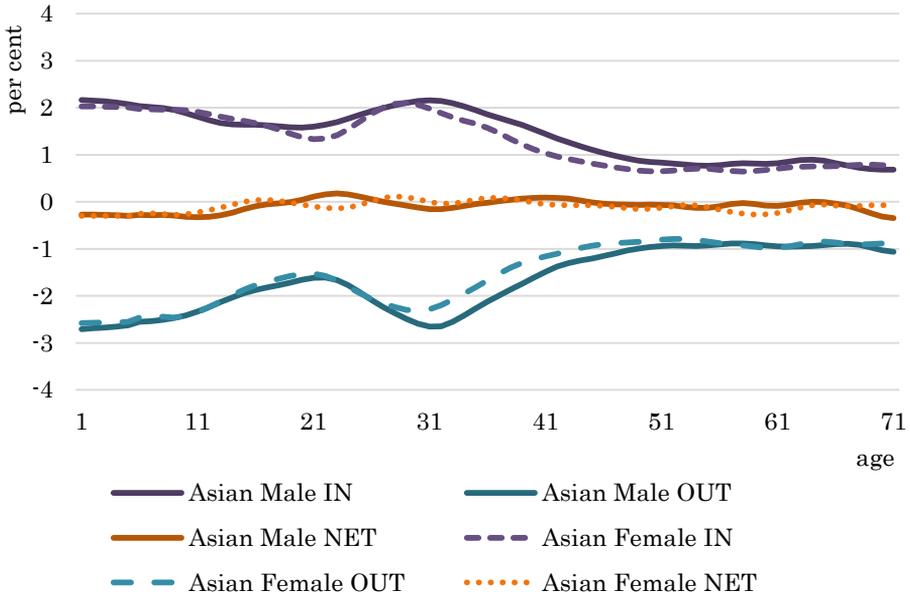


Figure 4: Pacific ethnic mobility, 1996–2013 average annual percentage gross flows and net change, ages 0 to 70 years



The Asian grouping (Figure 5) shows the effect of recent migration and settlement. The two main age ranges where ethnic mobility is greatest coincide, first, with the middle adult years as people settle and partner and, second, among the people who are predominantly the children of the first group. Much of this is associated with inter-ethnic partnering and with changes in identification associated with changes to social environment and context, especially settlement. International students have a major influence on the secondary school and prime university student ages, with lower levels of ethnic mobility at those ages. Part of the increase in rates from the mid-20s into the middle adult years is the result of delayed mobility of students who later choose to settle in New Zealand and the less ethnically mobile who depart. This pattern reflects a similar pattern exhibited by the Pacific populations at a similar stage of migration two decades earlier.

Figure 5: Asian ethnic mobility, 1996–2013 average annual percentage gross flows and net change, ages 0 to 70 years



Conclusion

A brief roadmap points to where this research is moving. Ethnic mobility affects a large proportion of all ethnic groups. It also affects ages differently as people move through their life course, particularly in connection with education and employment, partnering, and peer-group changes. Cohorts are also affected differently because changes in ethnic identification are connected with the historical socio-political environments throughout people's lives. The differences between males and females implicate these factors, too, as the timing of change is similar to demographic aspects such as age gaps in partnering, age at onset of childbearing and re-partnering. However, the magnitude of change differs, suggesting that other factors are also important.

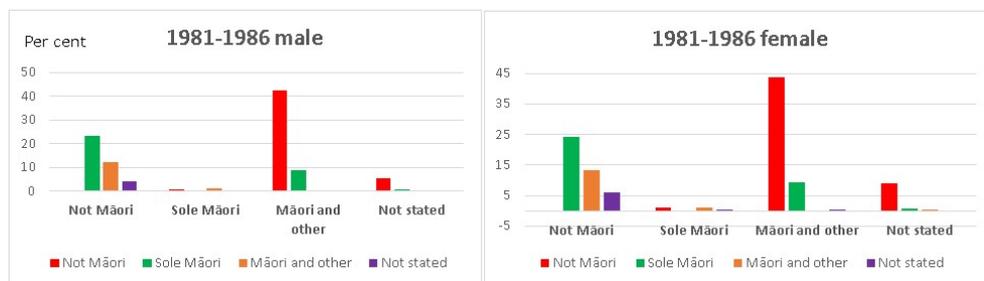
To some extent, there remains a gap between the data and the theory. Kurt Lewin's (1952) maxim is that good theory acts as the framework for valuable ways both to understand and conceptualise social processes and to point to potentially effective ways of dealing with social problems. While the topics of ethnic identification and ethnic mobility are not, per se, 'problems' and should not be problematised, the point remains valid. Nonetheless, alongside good theory sits good data. Evidential information and theory are each other's handmaidens, with the former revealing patterns that may not be apparent in the theoretical frame and the latter suggesting what the potential questions are, where to look, what to look at, and how to explain. It is expected that ongoing analysis of the data introduced in this paper will contribute to a better understanding of the dynamics of identity and of some aspects of the nature of diversity in New Zealand.

Appendices: Māori Ethnic Mobility, 1981–2013

The charts below show the intercensal movement of people between the categories of Sole Māori, Māori and other (i.e. people who specified that they were of Māori ethnicity as well as of at least one other ethnicity), Not Māori (people who did specify at least one ethnicity but not Māori) and Not stated (people who gave no valid ethnic response). The percentage in the heading of each graph shows the proportion of people in the linked data set who were present in that period and changed from one of the subject categories to another. In each case the x-axis labels refer to the later, destination, point in time while the column labels refer to the category they were in at the start of the stated intercensal period. The graphs contain only those who changed between the selected categories, omitting those who remained in the same grouping in each intercensal period.

Appendix 1a: Māori 1981–1986 (11.6%)

Distribution of people who changed category (as percentage of the linked population): where people were found in 1986 (x-axis labels) by where they were in 1981 (columns)



Appendix 1b: Māori 1986–1991 (4.5%)



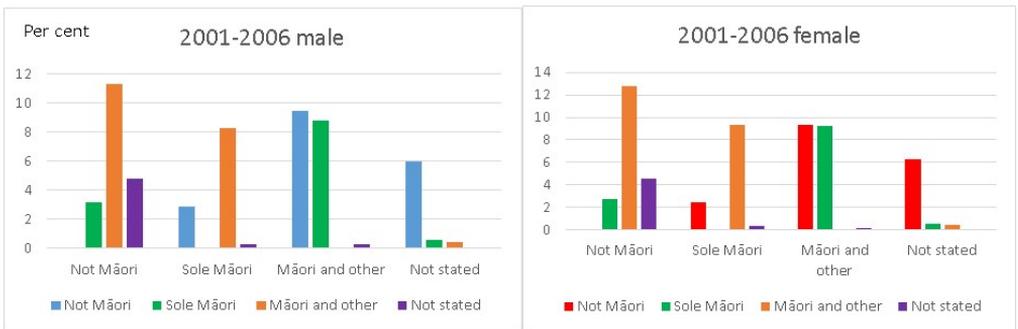
Appendix 1c: Māori 1991–1996 (6.1 %)



Appendix 1d: Māori 1996–2001 (6.4 %)



Appendix 1e: Māori 2001–2006 (5.2 %)



Appendix 1f: Māori 2006–2013 (6.5 %)



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Population Replacement, Nation-building, Population Policy

IAN POOL*

Abstract

For sustained and sustainable population and development trends, both population and development need to change slowly and consistently, or remain stationary. Perturbations and fluctuations must be minimal as otherwise they have flow-on effects on the entire demographic, economic and social systems. Exact “replacement”, when the adult population is succeeded demographically by younger cohorts, is the quintessential mechanism for stationarity. But in New Zealand’s policy dialogue, the term is frequently, and inaccurately, associated with workforce replenishment, which would, so it is wrongly argued, also offset ageing. To add to this problem, the policy debate also sees migration conflated with “population” overall, of which migration is, of course, merely a component. Here, the different factors of “replacement” are identified and their role analysed using as the framework a recent paper on Canada.

Population Change¹

Population decline and replacement

A recent *Wall Street Journal* article was provocatively titled “The World’s new population time bomb: Too few people” (Ip, 2015). Its message was encapsulated in its title, albeit tending a little towards hyperbole. But emerging research shows that population replacement is decreasing globally and could eventually produce population declines. The United Nations’ medium variant 2010–15 world total fertility rate (TFR) is below 2.40 births per woman – it was 5.00 when I graduated in demography. Indeed, much of the developing world, including its giants such as Brazil, China and India, has low or below-replacement fertility, as is seen in Table 1. Although India is above

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replacement, its southern states fall below. Only in Africa (and a few places elsewhere) is higher fertility widespread, although northern and southern Africa (e.g. Tunisia, 2.20; South Africa, 2.40) plus some central and eastern states have medium to low rates (e.g. Kenya, 4.50 – even so, compare this with its peak TFRs in the two decades 1955–75 of 8.00). While Nigeria remains high, nearby Ghana’s TFR has dropped from above 6.00 to 3.90.

As a concept, ‘replacement’ is often misunderstood. Population decline (which may produce ‘too few people’) is different from replacement, even sub-replacement. If sub-replacement fertility persists and is not counterbalanced by migration, then eventually populations decline, as is occurring in parts of Eastern Europe and subnationally in many countries, including New Zealand (Jackson, 2012a, 2014). The concept of replacement has a technical meaning – the reproduction of the adult population by the next generation of adults – and is underpinned by mathematical-demographic theory (Tuljapurkar, 2003). With high childhood survivorship – in Western developed countries, most babies reach adulthood – replacement is essentially a function of births, or ‘gross reproduction’; in populations with higher mortality, ‘net reproduction (birth cohorts modified by survival to adulthood) becomes critical.

We still tend to view replacement as dichotomous, with developed countries having low levels and developing nations higher.² By extrapolation, less developed societies are often construed as reservoirs of workers, to replenish the West’s labour forces. ‘Realpolitik’ scenarios want Third World workers as guest workers in the West, going home as work capacities fade, before migrants cost health and welfare dollars. Some neo-liberal commentators even suggest that the migrant workers’ remittances constitute significant components of Western ‘development aid’; New Zealand appears, however, to have designed more compassionate, carefully regulated programmes (Bedford, Burson, & Bedford, 2014).

Other demographic trends may erode these exchanges. Major Third World source countries, such as China, face their own ageing and thus may pressure working-age people to remain, not migrate. Moreover, Coleman and Basten (2015) show that replacement levels in Western developed countries may be low, but not as low as those emerging in some very large developing countries. If one combines these nations with Russia, Vietnam and the two Koreas, plus the low fertility in the southern half of India, low-

fertility developing nations and Russia comprise 44 per cent of the world's people.

Although associated with fertility, replacement has taken a wider meaning. The United Nations, in a seminal study, looked at 'replacement migration'; that is, how migration might replace, in particular, working-age populations as a solution for ageing (United Nations, 2001). Beyond migration, students of replacement are now increasingly aware of momentum effects, a neglected factor, often complex and typically affected by mortality. Indeed, until recently (the 1950s), high mortality had major impacts on global demographic growth (slowing it), and on the world's population sizes and structures.

Table 1: Total fertility rates, per woman, largest countries of the world

Decade	
Bangladesh	2.2
Brazil	1.8
China	1.7
India	2.5
Indonesia	2.2
Japan	1.4
Mexico	2.2
Nigeria	6.0
Russian Fed	1.6
Pakistan	3.3
United States	1.9

Source: World Bank.

Note: Countries with 100 million or more people.

Population factors, nation building and policy

The foundations for any culture, or for nation building, are population dynamics and structures. Māori started to recuperate only in the 20th century, after 19th century invasions of new diseases had affected their survival as a people and they had lost their capital – land.³ But the first and most primal step for development was demographic – to survive – for without survival, there is no development. Māori numbers declined until the 1890s, when, at their nadir, stationarity was reached (Pool, 2015a; Woodward & Blakely, 2014). These demographic factors also have a direct impact on nation building, the most significant long-term political issue a country faces. Addressing this, the Canadian demographer Alan Simmons

(2011) concluded that, for Canada to continue to grow, one or more of the following alternatives were necessary: more babies, more migrants, or accept slow growth and search for other alternatives; for example, increase productivity per worker, exploit groups with low labour force participation, and export production and jobs.

This paper uses Simmons's checklist to review replacement and nation building in Aotearoa New Zealand. It also raises related issues, particularly momentum (Pool, 2005a), and proposes another alternative that Natalie Jackson (2013) calls "collateral demographic dividend". I conclude this paper by raising policy issues. It is important that demographers enter these debates, preferably in association with political scientists. Yet Michael Teitelbaum (2015), who spans both disciplines, despairs that too often we leave policy issues to journalists, politicians, think tanks, and advocates of various ideologies, who do not appreciate the complexities and sensitivities inherent in the data they employ, often in a cavalier fashion. He details a number of examples – such as baby bulges, migration and ageing – but he is particularly concerned with the misuse of long-term projections that may portend 'demographic dystopias'. His is a powerful call for those of us in these disciplines to enter such debates in the hope of throwing more light on policy factors.

More Babies?

Māori and Pākehā have both sporadically achieved high rates of reproduction, which has contributed to a prime element of national identity – that New Zealand is a 'great place to raise a family'. In reality, Pākehā rates have not been consistent, ranging widely from 'hyper-fertility' in the 1870s, the highest in the industrialised countries, but falling by 1901 to almost the lowest,⁴ then on down to sub-replacement (late 1930s). Next came the post-war baby boom, entirely a Pākehā phenomenon, exceeding all other populations in developed countries. By contrast, Māori fertility continued at high levels throughout the 20th century, but then dropped precipitously in the 1970s. Our baby boom ended around 1973–74, not the 1960s (that was the US experience, wrongly assumed to apply in NZ).⁵ This is no academic quibble, because 10 more years, with a second peak in birth numbers around 1970, has imposed major effects due to cohort flows – momentum effects (see below) – on our future populations (Pool, 2007). As demographers, we too often

forget that, though the rates intrigue us and are essential for projections and other exercises, for policymakers and markets the factor of central interest is ‘numbers’; that is, the size of any birth cohort and their numerical ageing, and what are their needs for policy and demand for goods and services. The issues of cardinal concern are first the cohort’s passage through key age groups, and secondly, the growth in the numbers aged 65+ years. Tom Wilson, in a paper on Australian projections, has illustrated that the momentum generated by their baby boom will have flow-on effects on the sizes of future generations, some not yet born (Wilson, 2012). Structural ageing and dependency ratios are interesting and have a high profile, but too often provide the headlines and sound bites for politicians: “Today there are four workers per old person, but in the year 2050 [with an unvoiced sub-plot: ‘When I am no longer around to face up to my policy mistakes’] there will only be two.” Around 1990, the perceived challenges of structural ageing were even raised in OECD circles as an excuse to reform or eliminate the welfare state (Davey & Glasgow, 2006, p. 21).

Since the early 1970s, for longer than the baby boom lasted, our TFR has fluctuated around 2.0. (The baby boom lasted about 30 years (1944–74), and the post baby boom years more than 40 (1975–2016).) If one takes an even longer historical view – more than 130 years, from the 1880s to 2016 – over most of that time, Pākehā fertility, which was the real driver of national growth, was also either declining or low, in the mid-1930s and again recently, even at sub-replacement levels. Pākehā TFRs briefly exceeded 4.0 in 1960, but had last been at that level in 1890 (and probably in every year before that, from the Treaty of Waitangi or earlier). There are no indications that we will suddenly increase our fertility rates; rather the contrary, as Māori are gradually changing to later childbearing ages, and Pākehā (1.90) and Asian rates (1.50) are at sub-replacement already. Only Pasifika rates remain higher (2.80) (Pool et al., 2007, Figure 2.1 and Table 8.1).

To postulate futures due purely to demographic factors (i.e. not affected by policy interventions), I take Statistics New Zealand’s median likelihood projections (which seem realistic). They assume a slow decline: TFR (2013) = 2.0, TFR (2023) = 1.92, and TFR (2033) = 1.90. The results are shown in Table 2. The projections produce a modest increase at first (2013–23) and then no change; i.e. the numbers of births remain virtually

the same, despite modest rate changes. But what if, instead, rates were to remain constant at exact replacement, with no age-specific shifts, when numerical changes could only come from age-compositional effects (assuming no policy interventions). For this, I use a ‘steady state’ (fertility) model, the age specific fertility rates (ASFR) for 2009, when the TFR was at replacement, assuming that these rates remain constant.

Despite rates remaining constant, the number of births increases in each decade, purely as a function of shifts in the age composition of the female population at reproductive ages (lower panels of the table). Historically, in Aotearoa, women who bore children at older ages were typically multiparous; but today’s older mothers are generally primiparous (Pool et al., 2007). With larger cohorts of primigravidae at modal childbearing ages (25–34 years), over the period 2013–23, the number of births at these ages increases by 6500, or 20 per cent, most of the hypothesised increases in reproduction in that decade. This gain is modestly offset by decreases in the number of births to women aged below 25 years, but overall, about 5500 extra babies would be born. However, by 2033, the same cohorts will have become older and many women will have left the modal childbearing ages to enter the oldest maternal age group (35–49 years). These cohort changes would result only in a 2 per cent increase in births ($N = 660$) for women aged 25–34 years between 2023 and 2033, and about 2000 births overall.

Table 2: Growth (%) in numbers of births & of female populations

Decade	2013–23	2023–33
Growth (%) in births (Statistics NZ)*	7	0
Number of births (2023 & 2033)*	63,000	63,000
Growth (%) in births (ASFR)**	10	3
Number of births (2023 & 2033)**	68,198	70,505
Growth (%) in numbers of women at reproductive ages		
Women aged 15–49 years	1	7
Women aged 15–24 years	–4	4
Women aged 25–34 years	17	–2
Women aged 35–49 years	–5	16

Notes: *Statistics New Zealand median likelihood projection, TFR (2013) = 2.0

**Age-specific fertility rates (ASFR), 2009, births = 62,543, TFR = 2.1

Two conclusions can be drawn from these comparative scenarios. First, unless there are major shifts in maternal age and fertility rates increase for women in their mid- and late 20s, ‘more babies’ will not significantly drive Aotearoa’s demographic growth trajectory. But to increase childbearing among younger women would require reductions in existing frictions between the normative path:

Education → career building → delaying childbearing

which has evolved for young women in recent decades, and which results in needs that are different from those of couples engaged in family formation at the most fecundable ages. An alternative – a modest return to the early childbearing of the baby boom years – is a very unlikely scenario. Secondly, unless age-specific fertility rates change significantly, trends in the overall numbers of births will become merely a function of age-compositional shifts within the parental age group, a factor depending, above all, on differential momentum effects for cohorts reaching these ages.

We do not know for certain whether New Zealand couples still hold two-child norms, but the few data on childbearing intentions show a downwards shift. This rather specific question probes whether or not respondents feel that their own future situation might allow family building. Responses are tempered by realistic assessments about the effects of the 21st-century societal, employment and policy environments of Aotearoa for family dynamics and work-life balance. In New Zealand, many couples face problems of housing and childcare if both parents are working or have to work to provide a reasonable standard of living. Among Western developed countries, New Zealand lacks many public-policy props directed at reconciling prolonged education, work and family life, at the levels seen most notably in France and Scandinavia (Pool et al., 2007). Andersson (2008) argues, for example, that “Swedish family policies are not directly aimed at encouraging childbirth. Their main goal has rather been to support women’s participation in the labour force and to promote gender equality. They focus on enabling individuals to pursue their family and occupational pathways without being too dependent on other persons” (p. 89, as cited in Gauthier & Philipov, 2008).

A related but more sensitive issue has also been addressed in the Nordic countries and France: namely, that later childbearing is associated with better education. In New Zealand, this point has at times become

charged with neo-eugenic rhetoric, mostly in letters to the editor of the genre that “if couples can’t afford children, they shouldn’t have them”. More extreme commentators, coming from senior cabinet positions, assert that ‘the wrong people’ are having children and even argue, drawing on the United States’ Republican Party’s 1994 *Contract with America*, for punitive measures that aim at pressuring the unmarried poor not to have children (Bassett, 2003a, 2003b; Richardson, 1995, pp. 213–14). There are real concerns about such comments: “That higher-profile early-childbearing groups are also the more visible minorities, adds to polarisation in public discourses” (Pool et al., 2007, p. 380). The Nordic research shows that with careful policy initiatives, the socio-economic differential can be greatly diminished. Rønsen and Skrede cite a study whose co-author is an expatriate New Zealander, Michael Rendall, saying that “in Britain,... first childbearing among women with medium and higher education was shown to occur much later than in Norway and France”. In another co-authored study controlling for professional-managerial status, Rendall and colleagues show that by 30 years of age, a French woman professional will have had a child whereas her English counterpart will not (Rendall et al., 2005). This is a function of different policy approaches (Eckert-Jaffe et al., 2002).

A more vaguely constructed statistic on desired family sizes, the modal two-child norm in Western developed countries, probably applies also to New Zealand: “Despite some wobbling in the early 2000s, a two-child norm remained remarkably constant in Europe...” (Eckert-Jaffe et al., 2002). Couples may ideally desire two children, but know that by attempting to conceive in their late 30s, this norm might be difficult to attain. This contrasts, for example, with Chinese values: “Chinese policy-makers and demographers had expected that fertility would resume to a 2-child or higher standard once restrictions to a single child were lifted. So far that expectation seems to have been confounded” (Coleman, Basten, & Billari, 2015).

More Migrants

Migration is frequently advocated as the answer to New Zealand’s demographic problems, particularly the replacement of the workforce. There is no doubt that historically migration has played a powerful, positive role in our development. I favour migration as it enriches society,

and I applaud the initiatives taken by people like lawyer Mai Chen who valorise migration and diversity (Chen, 2015). Nonetheless, the careful evaluation of the complexities of this issue by the United Nations (2001), and their rather negative conclusions, seem to have passed by some of New Zealand's commentators on migration trends.⁶ To me, the question does not revolve around whether or not we should encourage migration, but how we can best welcome those people who have opted to move to New Zealand, in the process accommodating their needs and their cultures to our mix in a way that contributes to nation building yet endorses diversity. As I have a paper on this in the Richard Bedford *Festschrift* (Pool, 2015c), I will simply summarise some of its key points.

Because of intense annual fluctuations – a point underlining my concerns about the turbulence of migration flows – in any meaningful analysis of migration it is wise to dampen down perturbations by using quinquennial trends, rather than year to year, or worse, quarter by quarter. In all quinquennia since 1876, when the Vogel Schemes ended, until 2000, plus the quadrennia 2006–2010 and 2010–2014, natural increase has outrun net migration as a contributor to population growth – the sole exception to this being the period 2001–05. Moreover, of all the net migrants entering New Zealand over the long 160 years 1840 to 2000, 41 per cent had arrived before 1900. In fact, 20 per cent came in just two quinquennial (1861–1865 and 1871–1875), yet this still represents a mere 6 per cent of the period 1840–2000. In the recent quarter century, 1976–2000, when migration had a very high media profile, natural increase exceeded 686,000, but net migration was *minus* 39,000. Even given positive migration trends, in the decade to 2010, the contribution of migration was still only 25 per cent of New Zealand's stock of people, up just a bit from the 23 per cent that had been seen in many interwar years, and net migration still only constituted 36 per cent of growth.

All decades since 1970 experienced heavy gains in their first quinquennia, but losses or merely modest gains in their second. At the time of writing, there are still several months to complete the quinquennium to December 2015, and there were certainly record inflows in the year ending October 2015. That said, however, 2015 seems to have been different, either setting a trend or an historically unique year. Student-visa inflows, increased decision-making by resident New Zealanders not to emigrate, and significant returns from Australia and

elsewhere, all played disproportionate roles in the migrant streams. Net migration has, in this one year, outrun net natural increase: net migration was 73,066 and natural increase 29,430.

After the war, fertility changes had buffeted New Zealand's demographic system, with the baby boom outshining post-war migration until the 1970s. By contrast, it has been migration that has fluctuated wildly since 1970, obscuring the 'baby bust' of that decade. Since the late 1970s, fertility rates have remained more or less consistently around replacement, even counting the 'baby blip' circa 1990. In contrast, not only have migration rates fluctuated inconsistently from year to year, but digging down into the detail, one finds another factor that should cause great concern to policymakers, yet is largely ignored. This is *churning*,⁷ when the profiles of net migrant flows in any one period change dramatically – often even between one year and the next. These include changes in direction (in/out), to which we have been particularly prone, plus shift shares by age, gender, labour force (within it, by ages, statuses and occupations), and national origin (and thus cultural group). This also means that the New Zealand-born who leave Aotearoa may be replaced by foreign-born. While I welcome the foreign-born, who enrich New Zealand, it has also to be recognised that migratory-wave induced succession does have impacts on all parts of the demographic, economic and social systems. The age-group and cultural shifts alone mean that planning and policy, say for housing or schooling, become very difficult, if not impossible.

But for the long term, it is the churning by cultural group, particularly the smaller ones, that must assume importance, yet this issue has not been analysed in the detail it deserves. Turnover/churning particularly affects the sizes, age structures and demographic viability of migrant groups. More and more diversity allows the host society to feel that Aotearoa is welcoming and liberal. But if the new migrants sense that their cultural or ethnic group is scattered and swamped – that it is too small to allow for normal social dynamics, such as endogamy, frequent interactions with like people, and the maintenance of language and other cultural traditions – then their integration will be all the more difficult. The fragility and threats to viability due to small population sizes was addressed by the late Andrew Trlin (1979) when referring to Dalmatians. By contrast, Dutch migration of the post-war period probably constitutes a good model.

Churning affects the replacement of the working-age population; the evidence available on the age structures of inflowing and outflowing streams certainly shows this (Pool, 2015c, Table 5). Moreover, migration strategies weighted towards the working-age population certainly do not counter ageing. As I noted almost 20 years ago, the young migrants of the 1950s contributed to our baby boom; the next peak inflow at these ages in the 1970s inflated the sizes of the early baby boom (1945–50) birth cohorts; in the 1990s, inflows were often weighted towards populations in their 40s; and lest we forget, the New Zealanders who leave and remain permanently in the diaspora are young people. For migration to counter ageing, it would be essential to have continuous inflows of consistent composition – clearly an impossibility. But even then, this would contribute to ageing by 2050: “[W]e tend to forget that an active young worker is no more immune from the effects of biology than anyone else” (Pool, 1997, p. 13).

Finally, and positively, New Zealand does not seem to have opted for assertive forms of migrant assimilation – the American model, which assumes that the host society’s norms and values must override those of migrants – nor, of course, would we favour segregation. Instead, as John Hunn (1960) argued for Māori, and as became the guiding principle for Canada’s mosaic, following a Royal Commission in 1971, a more effective alternative is integration, where migrants participate fully in the economy, polity and society without necessarily sacrificing their own culture.⁸ Nominally, however imperfectly, New Zealand does seem to have adopted this model in the case of Māori, and is moving towards it for migrants.

Momentum Effects

Momentum is a neglected factor of population change and replacement (Pool 2005a; Wilson, 2012), probably because it is a more deterministic factor than are fertility and migration. It occurs because of the flow-on effects of population changes in the past. These could be altered by catastrophic events, such as impacts on male cohorts because of war fatalities. For example, British male aristocrats, especially the cohort born 1875–99, the World War One junior officers who led charges over the trench parapets, are a well-documented example (Hollingsworth, 1964), whereas the impacts of World War Two and the Great Famine on Russia’s and China’s cohorts are perhaps less well-known (Pool, 2005b). The meticulous study by Kim Dunstan and others on New Zealand cohort

mortality, where they built in the effects of deaths of men in both World Wars, is another example (Dunstan et al., 2006).

Momenta are the product of birth cohort sizes, as these cohorts are modified by both mortality and net migration. Migration and fertility already figure in the Simmons model, but mortality must also be seen as a significant default factor. Papers co-authored with Jit Cheung (Pool & Cheung, 2003, 2005) show that the very rapid declines in Pākehā child mortality between the 1870s and 1901 had momentum effects into adulthood that drove the favourable life expectancies seen for Pākehā in the interwar years. Increasing numbers of late-Victorian birth cohorts reached lower-risk adult ages, an effect then further reinforced at adulthood by declines in work-force-related accident mortality because of sectoral changes in employment.

A second example of this was when Māori mortality declined dramatically immediately after World War Two. As the force of mortality was highest for children, this had an immediate impact on the age group 0–4 years, which from 1945 to 1956 increased from 17 per cent to 19 per cent of the total, and then to 20 per cent in 1961. This affected the use of indirect estimation techniques that assumed ‘stability’ (in a mathematical-demographic sense), having implications for analyses. From 1900 to 1945, the Māori population had been ‘quasi-stable’, allowing the exploitation of age structures for indirect estimates of vital rates, or to adjust directly computed rates. The improvements in childhood survivorship then ‘destabilized’ the structures, which could no longer be used for indirect estimation (Pool, 1977, Appendix). Fortunately, by then official data collections were sufficiently complete to allow rates to be directly computed.⁹

A third, but more complex, bi-dimensional example is the relationship between functional health and life table survivorship functions (Pool, 2015b). New Zealand’s elderly are mainly Pākehā, a function not so much of improvements in survivorship but primarily of their birth cohort sizes in the past. By contrast, if Māori at 40 years and over, males in particular, could achieve the health and survivorship chances of their non-Māori peers, this would have momentum effects, so that the numbers living into retirement ages would increase. This would affect patient mixes for services dealing with expanding elderly

populations, but is also germane to debates on superannuation and probabilities of surviving to retirement.

Effects become more extreme at subnational levels – regions (not covered here; see Jackson, 2012a; Jackson, Cameron, & Pool, 2015), ethnic/migrant groups (especially minorities), labour force composition and family structures. New Zealand, almost alone among developed countries, has a hidden advantage, but only if an emerging ‘window of opportunity’ (the technical term) is managed properly. Māori and Pasifika momenta (large birth cohorts moving into working ages) will offer New Zealand a second chance of a demographic dividend. In two important papers, Natalie Jackson (2012b, 2013, now forthcoming) has documented these effects. The significance of the issues Jackson has raised needs urgent attention in Aotearoa’s public policy dialogue. The demographic dividends literature is very clear on what needs to be done to manage a window of opportunity and secure a dividend: deepening human capital by education, workforce training and proactive labour market policies.

Cohort momentum is a macro-level construct, whereas recently, the hegemonic explanatory frameworks have been micro-level. “Maire Ni Bhrolcain’s iconoclastic paper (‘Period Paramount’) disputed the moral and technical superiority of cohort analysis. To some it now seems that we are confronted with ‘micro-paramount’... Some, however, have feared that such primary emphasis on micro-approaches risked moving towards ‘a demography without population’” (Coleman et al., 2015, p. 2, citing Ni Brochlain).

This is a continuing debate that focuses on measurement and also raises the flaws in the TFR. Were this merely an academic issue, the debates would be tangential to the policy discourse. Unfortunately, methodological questions have a direct impact on the interpretation of many indicators, and is particularly significant for one like the TFT that is used so frequently by both demographers and policy analysts (Sobotka & Lutz, 2010). However, the use of complex but more robust measures is also problematic – as will have been the experience of anyone who has tried to explain life table functions to the wider public.

In Aotearoa, cohort flows arise in another way that has been analysed by Natalie Jackson. Perhaps our most potent possibility lies with the window of opportunity for, what Jackson calls, a “collateral demographic dividend” resulting from Pasifika and Māori youth reaching

working ages (Jackson, 2012b, 2013). This will produce a relatively protracted period of human capital ‘widening’,¹⁰ but will be translated into a dividend only with Māori and Pasifika human capital ‘deepening’. Turning a window of opportunity into dividends will thus require education, training and proactive labour market policies producing meaningful and appropriately remunerated employment of these cohorts, but it would have positive impacts on both nation building and inequalities. Additionally, were that to be achieved and investments made in appropriate infrastructure, physical capital and stronger institutions, as Andrew Mason and Ronald Lee, the leading population economists in this area, point out, there could be a second demographic dividend. This will be less transitory than the first, because of capital deepening, and fortuitously would coincide with population ageing (Mason, 2006; Mason & Lee, 2006).

Lastly, by analysing the macro-phenomena of cohorts (collectivities of people moving through life stages), we shift demography back into the arena in which policymakers operate. In part, this micro-macro divide also illuminates a recent vigorous debate on low fertility. John Caldwell and Thomas Schindlmayr (2003) cited Kingsley Davis’s (1937) macro-level prognosis, made long ago and which was not unrealistic, that reproduction and modern life are hard to reconcile. In response, commentators in that journal’s next issue saw micro-approaches as the ultimate sources of demographic explanation, viewing Caldwell and Schindlmayr almost as apostates for suggesting an alternative.

Other Alternative Strategies

I briefly turn to Simmons’s other suggestions.

Increasing productivity

Measuring productivity is difficult, contentious and often highly subjective, and approaches are used at a macro-level are different to those used by firms and corporate bodies. A debate on this is currently raging between Piketty and his critics, even those who support his empirical conclusions but attack his use of theory (Moseley, 2014). Not surprisingly, therefore, conclusions about productivity seem to vary from observer to observer. My own view is that there is an unwillingness on the part of New Zealand businesses to invest in start-ups, plant and human capital, and there is a

lack of venture capital. Much of economic 'growth' recently has come in the FIRE sector (finance, insurance and real estate). In 1972, the FIRE sector and associated professional and managerial services contributed 14 per cent to the total New Zealand economy; in 2010, this was 29 per cent. Over the same period, government, health and education and other services shifted from 14 per cent to 20 per cent. The biggest loss was in the secondary sector, which dropped from 35 per cent to 22 per cent, while the primary and distribution (retail, wholesale, accommodation, transport and communications) industries both decreased by a few percentage points (*New Zealand Official Yearbook*, 2012). While the FIRE sector contributes to GDP, itself a contentious measure, it is a moot point about its real contribution to national production. Thus, the possibility of increasing productivity seems limited unless a quantum shift occurs between the rentier and productive sectors.

Increasing labour force participation

New Zealand has only limited room to manoeuvre because labour force participation rates are already high. However, growth is believed to be disproportionately in 'insecure areas', such as casual jobs.¹¹ Increases are occurring for people at older working and early retirement ages, but in the longer term this effect will be diluted by momentum, involving a shift from a preponderance of young elderly (<75 years of age) to older (75+ years). An unsolved problem is how to create jobs and increase participation in deprived regions that have high levels of unemployment and large numbers of people on benefits. New Zealand has not undertaken a National Transfer Accounts exercise, but overseas studies, anecdotes and observations suggest that intra-family transfers will be very important – probably far outrunning those from public or not-for-profit sources (benefits and charity, including health, income, educational and housing support). Perhaps most important, if New Zealand follows overseas trends, will be grandparent support; for example, after-school care of grandchildren, which allows couples to work full-time or long hours.

Exporting jobs

This occurs already very commonly, and is only a part of 'offshoring'. The United States' experience shows that the numbers of jobs and rates of

change involved vary from occupation to occupation (Booth, 2013). Some firms are now, however, rethinking and moving in the opposite direction; i.e. ‘reshoring’. This is because there are pros and cons in the practice of offshoring (Krugman, 2007). Differential wages between developed and developing countries have been arguably a great advantage, at least to enterprises and shareholders, but not to workers who have lost their jobs in wealthy countries, nor to those in developing countries who work under ‘sweat shop’ conditions. It has also been argued that some of the exporting of jobs brings investment to Third World economies, but against this, they may have to import high-tech components that are being assembled into goods to be exported from their countries. Today, there is a shift from exporting unskilled jobs to exporting more skilled jobs. Increasingly, the control of the food chain is also shifting offshore towards international retail and food-processing conglomerates.

Conclusion: Are There Appropriate Policies?

The alternatives to replacement proposed by Simmons seem limited in scope. In effect, we really have to look instead at replacement options, which will also build nations. These options revolve around a complex mix of strategies, a third of which may be an advantage New Zealand could gain, but that are not available in other jurisdictions:

[Reproduction] + [boosts from migration] + [a potential demographic dividend].

Reproduction

Our TFRs at 1.9–2.0 (1.99 in 2015) are close to replacement but their sustainability is dependent on a set of conditions. First, Pasifika and Māori fertility would need to continue to remain above replacement. Much more attention would have to be paid to social support systems aimed at ensuring that all children live in financially viable families and in well-constructed homes that are not overcrowded, and where tenure is secured so that children can achieve long-term stability in schooling. These are not just the children of the unemployed but also those in families whose breadwinners are on minimum incomes. Because of the total response coding system (by which some births are counted more than once), it is impossible to determine the ethnic distribution of births, but perhaps 30+

per cent are from ethnicities with higher fertility. By contrast, Asian rates, perhaps 12–14 per cent of total births, are low, except for Filipina. Secondly, for fertility levels to be at or above replacement, much more attention would have to be paid to work-family balances in general: better maternity leave, quality childcare, and policies permitting the combining of study/career advancement with parenting, especially for women in their late 20s.

New Zealand seems to have ‘muddled along’ with its reproductive strategies. The assault on the welfare state at the end of the 1980s and start of the 1990s post-dated the onset of the baby bust, so cannot be directly blamed for precipitating low fertility. In any case, bare replacement fertility had really been the norm for Pākehā at least since 1890, and despite our self-identity of being a young vibrant country where it is good to have children. But what the demise of the welfare state has meant is that attempts to introduce policies to bridge between work and the family – so as to allow us to move closer to Nordic models which are not perfect but are better than most, and away from the Anglo-Saxon ones which are far less perfect – are very difficult to achieve. Our adherence to Anglo-Saxon models is proven by the recent failure to get maternity leave conditions that match family realities (at least six months so that a child is acculturated and, if suitable for the family, breastfed). The universal family benefit, condemned and legislated out of existence by neo-liberal reformers as welfare for the well-off, has now again become an issue that has re-entered the public dialogue. The central dilemma is how to cluster reproduction at the most fecundable ages after basic education and entering the job market (say 25–29 years), yet ensure gender equality in terms of postgraduate education or advanced training plus movement up career ladders.

Net immigration

To date we have managed recent inflows in a very cavalier manner, including around the most politically high-profile movements: labour force recruitment. Migration flows are difficult to control, but more carefully designed indirect policies might encourage some forms of migration, and permanent settlement, or perhaps discourage others. Among encouragements should be the retention of young citizens on whose

socialisation and education we have already invested, and paying attention to the sociocultural viability of smaller minority groups.

Potential second-chance demographic dividend

I wish I could be optimistic about the demographic dividend, but – and it is a big but – New Zealand’s history suggests that, once again, it will not grasp this window of opportunity. It profligately squandered its last one, revolving around large Pākehā cohorts reaching working ages (1976–2014). Our history is abysmal: Muldoon’s canning of superannuation, which would have provided a significant sovereign capital fund for investment; the restructuring of the economy by Douglas, in which there were no concerns about human capital; Richardson’s subsequent ‘mother of all budgets’, which introduced punitive benefit regimes for those thrown out of work by restructuring; plus the labour and investment policies of the 1990s. There was a brief reprise from this approach in the early 2000s, but the later 2000s saw the swiftly fading window of opportunity squandered again (e.g. putting the Cullen Fund on hold).

Notes

- 1 I wish to thank the anonymous external referees. In particular, their suggestion for more on the Nordic experience was most welcome. They must rest assured that the Nordic papers I cite here and the edited collection to which these articles contribute make frequent reference to Peter McDonald’s work, so he is here in spirit. He is also oft cited in Pool et al. (2007). However, I have chosen here to turn to more recent European papers.
- 2 Table 1 shows that this no longer holds true.
- 3 I use Thomas Piketty’s (2014) definition of capital; land was a fundamental factor of Victorian era wealth.
- 4 This was achieved by a significant shift in marriage patterns, not through contraception – the available technology was highly inadequate – nor through abortion (Pool, Dharmalingam, & Sceats, 2007).
- 5 American demographers use rates to come to that conclusion. However, if one looks at numbers of births – and a baby boom is just that (more births) – plus the other emblematic feature of young childbearing, both of these extended into the mid-1970s (Pool, 2007). For policymakers, the numbers of births are more critical than the rates.

- 6 To illustrate the complexities, one can cite Germany in 2015, which is experiencing the pros and cons to this debate: Angela Merkel seems aware that the skilled refugees flooding into Europe in 2015 could well meet Germany's labour needs, but against this, at a popular level, there is a politico-emotional backlash against the inflows.
- 7 I draw here on the word 'churn', employed in Britain particularly in reference to local-area population turnover. Dennett and Stilwell's (2008, p. 24) definition is useful. I used 'churning' in a policy paper to PANZ's 40th Birthday in 2014 (Pool, 2014).
- 8 This was the philosophy argued in his Report on the Department of Maori Affairs. Essentially, after reviewing different alternatives, Hunn supported integration, paralleling the findings of the Canadian Royal Commission on Bi-lingualism and Bi-culturalism (established 1963), which later extended its brief to multi-culturalism (1971). Its arguments played a significant role in constructing Canadian ethnic (and religious) policy.
- 9 Official data show a counter-intuitive increase in rates across the 1920s and 1930s. Adjustments allow corrections to give a more intuitively reasonable set of trends (Sceats & Pool, 1985).
- 10 I thank Jacques Poot (see Akgun et al., 2011) for bringing this concept to my attention.
- 11 I discussed this issue with Bill Cochrane, School of Social Sciences, University of Waikato, who is working on 'precarious employment'. I thank him for his insights into a complex issue. Among other things, he noted severe problems with data that, at present, make any sort of definitive conclusion unreliable.

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Policy Responses to Depopulation

RACHAEL MCMILLAN*

Abstract

Significant demographic trends are transforming the global population, with record low fertility across the globe, increasing longevity and increasingly mobile populations. Population growth has already ended in a number of countries, and depopulation has begun. Depopulation impacts are first felt on a local scale and there are major flow-on effects for the allocation of resources, the provision of services and the viability of communities. Governments and planners have yet to learn how to manage population decline as it does not occur in a uniform manner at the local level and institutional arrangements and the legal framework are geared for a growth paradigm.

This paper describes key findings from a study of the spectrum of policy responses to address population decline in eight OECD countries. Three main types of response to depopulation were identified, divided into ten policy positions. The findings indicate that responses to depopulation vary significantly from country to country. There is a strong relationship between depth and length of depopulation and the response to depopulation. While the growth paradigm appears to dominate over the governmental response to depopulation, there does not seem to be a systematic agenda within countries to counter or accept decline. Rather, a mix of population policies and responsive policies are adopted at any level deemed appropriate to attempt to influence demographic change.

Population decline has been identified as a major future challenge. The last century was categorised by tremendous population growth which brought the world's population to more than six billion before the close of the century (United Nations, 2001), with another billion added by 2011 (United Nations, 2011). The 21st century, on the other hand, is ushering in a new population trend: depopulation.

* This paper was the winner of the 2015 Statistics New Zealand Jacoby Prize for the best essay on a New Zealand related population topic written during a course of university study. At the time of writing, Rachael was enrolled at National Institute of Demographic and Economic Analysis, The University of Waikato. She is currently a Research Associate with Natalie Jackson Demographics Ltd and a Strategic Analyst at Hamilton City Council. Email: Rachael.McMillan@hcc.govt.nz.

Although projections released in 2015 show little prospect of world population growth ending before the end of this century (United Nations, 2015), decline in many more developed countries (MDCs) is masked by high fertility in sub-Saharan Africa (Gerland et al., 2014; Kunzig, 2014). Low or zero growth is becoming an issue for many advanced-economy countries (Lee, 2011).

By 2008, twenty-six countries were shrinking at the national level including, for example, Russia, Bulgaria, Zimbabwe, Ukraine and Latvia (Pearce, 2010). Germany and Japan began shrinking during 2010 and 2011, respectively (World Bank, 2015). By 2050, the UN Population Division projects, under the medium variant, that 43 countries will shrink, with 11 of these countries losing more than 15 per cent of their populations between 2015 and 2050 (United Nations, 2015).

Depopulation typically occurs first at subnational level before becoming a national issue and there is evidence that population decline begins in the regions before extending to the cities (Jackson, Cameron, & Cochrane, 2014). Although several European countries began to depopulate nationally in the 1990s, many more began shrinking at a regional level during the same period (Martinez-Fernandez, Fol, & Cunningham-Sabot, 2012). Subnational decline is also clear in other MDC countries, such as Australia, Canada and the United States (UK) (Frey, 2014; Mackenzie, 1994; Martinez-Fernandez, Kubo, Nova, & Weyman, 2012; Sedlacek, Kurka, & Maier, 2009; Warkentin, 2012).

Two questions animate this research: What is the range of policy responses to depopulation? And what responses are countries choosing to deal with their depopulation issues? Eight OECD countries were studied to understand the choices that they made in the context of their level of depopulation.

Drivers of Population Change

Population shrinkage is affected by wider economic and social transformations within societies on global, national and regional levels (Martinez-Fernandez et al., 2012). The drivers for population shrinkage are multidimensional, with complex and cumulative self-reinforcing patterns (Matanle & Rausch, 2011). These drivers are shown in Table 1.

Table 1: Drivers of depopulation

Long-term drivers	Short-term drivers
Globalisation	Economic cycles and external shocks ¹
Demographic trends ²	Political transformations and policies
	Changing spatial trends – mobility of workers, urbanisation, concentration

Globalisation

Global transformations have occurred in the last fifty years that have had significant impacts on depopulation at both the regional and national levels (Martinez-Fernandez et al., 2012). Globalisation is a key driver in creating economic cycles, political transformations and policies, and changing the spatial distribution of people and capital. Although there is no consistent definition of globalisation (Rzepka, 2011), broadly in economic terms, globalisation “consists of the integration of national economies in the direction of an international trade-based economy, direct foreign investment, short-term capital flows, the international flow of workers and people in general, as well as the flow of technology” (Bhagwati, 2004, p. 3).

The literature suggests that the forces of globalisation and agglomeration concentrate financial capital, human capital, resources and infrastructure in globally competitive cities, which funnels those essential resources from cities, towns or regions on the periphery (Beetz, Huning, & Plieninger, 2008; Martinez-Fernandez et al., 2012). Consequently, growth is unbalanced with some areas experiencing labour surpluses while others experience prolonged shortages, particularly of skilled labour. In addition to this, empirical evidence suggests that population ageing reinforces agglomeration (Grafeneder-Weissteiner, & Prettnner, 2013), suggesting further concentrations as the population ages.

Paradigm shifts in economic theory have had a huge impact on populations over the last 40 years with neoliberal and capitalist concepts driving political policies, changing how industry and trade function with consequential effect on community dynamics (Martinez-Fernandez et al., 2012). Neoliberalism favours macro-economic deregulation and privatisation of state industries, and has been linked to the loss of jobs (Conradson & Pawson, 2009). In New Zealand, when the Government adopted neoliberalism, employment dropped dramatically in peripheral

areas, such as the West Coast of the South Island, which had previously been sustained by local or national state government agencies (Conradson & Pawson, 2009).

Whether economic cycles drive depopulation or depopulation drives economy is still a matter of debate.

Whether a declining economy leads people to leave or an increasing number of people leaving results in a declining economy, it is clear that as the process advances, there are consequences. (Martinez-Fernandez et al., 2012, p. 21)

External shocks also affect depopulation. These shocks encompass unanticipated events that have large effects on population and/or the economy, such as, but not limited to, natural hazard events and wars. When short-term drivers, such as external shocks, coincide with downward trending long-term drivers, there is reduced ability for towns to recover, leading to depopulation (Matanle, 2011).

Demographic trends

Across the developed world, demographic trends tend to follow a similar pattern with total fertility below population replacement levels for extended periods of time and increasing longevity and ageing populations. The ability for a population to replace itself is expressed as a total fertility rate (TFR) of approximately 2.1 children per woman in countries with low mortality.³ The TFR has been falling for the last 50 years across the world, even in the less developed and least developed countries (LDCs). The reduction in total fertility rates is a global phenomenon. There is a lag of several decades between the time when below-replacement level fertility becomes entrenched in a country and the onset of national level depopulation. There are now 70 countries that have a TFR of below 2.0. Thirty-nine of these low fertility countries from 2005–2010 are located in Europe, with 16 in Asia, and 12 in Latin American and the Caribbean (United Nations, 2014).⁴

Total fertility rates have been declining in the more developed regions for an extended period, with many of these countries having already experienced below-replacement fertility for several decades (United Nations, 2014). According to Pearce (2010), once this trend has been established it is very hard to turn around and will have profound

implications for the developed nations. Below-replacement fertility has been in place for so long that there are relatively small cohorts under the age of 30, shrinking the size of the number of mothers progressively with each generation creating downwards momentum. Even if fertility returned to above replacement level, negative population momentum would continue for some time (ONeill et al., 2001). Several countries are concerned that these fertility patterns will have significant social and economic consequences (United Nations, 2014).

A consequence of continued low fertility is structural population ageing (United Nations, 2010). The extent of population ageing is dependent on the length of time that low fertility has been occurring and the depth of the fertility decline (United Nations, 2014). Countries are at different stages of the ageing process and the pace of structural ageing also differs significantly between countries (United Nations, 2002). Lutz, Sanderson & Sherbov (2008) stated that the speed of ageing is likely to increase over the coming decades and to decelerate again after mid-century. Of note, population ageing is largely irreversible and populations are not expected to return to the young age structures of the past if longevity continues to advance and fertility remains low (Martinez-Fernandez et al., 2012b; United Nations, 2002, 2010).

Subnational depopulation

Even within countries, population ageing is not uniform and differs greatly between subnational areas (Jackson, Cameron, & Cochrane 2014). Shrinking and growing processes may also be seen in parallel in many countries (Wiechmann & Pallagst, 2012). At a subnational level, the diversity between areas is caused by local-level mixes of the drivers of population ageing: birth rates, longevity and migration (Jackson, 2007). These factors have different mixes in different locations, but have significant impacts on the ability of subnational areas to provide services for their populations. For the most part, population change is likely to be incremental, but where the drivers combine, the process may be much more rapid and lead to absolute or terminal decline (Jackson et al., 2014).

Population ageing and out-migration can place pressure on labour supply, public budgets, health and welfare provisions and infrastructure for both national populations and subnational areas (Ferry & Vironen, 2011, p. 25). Population shrinkage can be self-reinforcing, creating a cycle

of slowing economic activity, out-migration of human capital, restricted local revenues, degradation of social and physical networks and services, and a reduced quality of life for those left behind (Australian Bureau of Statistics, 1998; Haartsen & Venhorst, 2009; Matanle & Rausch, 2011).

The balance and interplay of drivers is unique to each country and regional context, increasing the complexity of any response to depopulation. This paper explores the spectrum of responses from a number of OECD countries that are either depopulating on a national level or experiencing shrinkage subnationally.

Methodology

The first part of this research examined the range of policy responses to depopulation in the policy response literature. Seven different policy response frameworks were identified. A theoretical policy typology was formulated from a synthesis of the various policy groupings provided by the response literature.

The second part of this research surveyed eight OECD countries to explore their responses to depopulation. The countries selected were Australia, Canada, Germany, Japan, the Netherlands, New Zealand, the United Kingdom (UK) and the United States (US). These countries were selected from among the OECD countries to show a range of responses to the issues of depopulation. The countries were chosen for a range of factors – level of depopulation, examples of policy instruments, similarity of political economy, and exploration of strategies with which to address depopulation – that enabled a presentation of a range of response types and intervention levels for comparability.

A profile was built of each country to examine how demographic indicators interconnected with each country's response to depopulation. The variables selected to identify the response to depopulation were central government population policies in response to national population change, policy response to subnational variation, and regional policy approaches. Demographic indicators were examined from censuses, OECD surveys and databases, and the UN Population Division and World Bank databases. Country response profiles were developed from a wide variety of literature sources.

Policy Responses

Demographic decline and its associated problems have encouraged policymakers across numerous countries to develop counteractive policies (Hospers, 2014). There is no consensus on the definition of a population policy. Population policy definitions can range from narrow to broad. Narrow definitions may be as specific as all deliberate government actions to influence population (i.e. laws, government programmes and regulations), while broad definitions can include population-responsive policies, such as all the ways that governments respond to population changes (i.e. reducing the number of houses available, closing schools in a depopulating situation, etc.) (Lucas & Meyer, 1994).

Population policies may be divided into broad categories: direct or indirect, explicit or implicit, and intervention or non-intervention. For instance, direct policies affect population variables directly, such as immigration policies that may increase growth rates, while indirect policies may be targeted at another goal but have an indirect effect on population variables (Lucas & Meyer, 1994). Some policies may be aimed at explicitly addressing population decline, while others may be focused on managing the effects of depopulation, such as through the proxy of economic development (implicit). Finally, there can be policies of intervention and non-intervention. Policies of non-intervention are deliberate actions by a government to choose not to intervene after investigation of the issue (Lucas & Meyer, 1994).

This paper uses the narrow definition of a population policy to discuss central government policies for addressing national population change and subnational distribution, and focuses on specific population policy actions. These policies are categorised as explicit direct policies, which means that their objectives and means for achieving them are formally articulated (Lucas & Meyer, 1994). When drilling down into regional and local government policy action, the broader definition of 'population responsive action' was adopted due to the fact that many governments at this level do not have the power to change traditional population policies to influence their regions (i.e. fertility, abortion, etc.) but rather rely on the use of economic development to change their population situations (Lucas & Meyer, 1994).

Spectrum of policy responses

Population and development are understood to be interlinked, with population influencing development and development influenced by population (Lucas & Meyer, 1994). The link between economic development and population growth has been heavily debated for decades. There are three main schools of thought: population pessimism, population optimism, and population neutralism. Population pessimists believe that high fertility and rapid population growth constrain development, population optimists insist that rapid population growth fuels economic development by increasing market size, and those ascribing to population neutralism hold that population growth has little effect on economic growth – a conclusion supported by numerous economic studies (Bloom, Canning, & Sevilla, 2002; European Union, 2008). Evidence from regional studies in Europe have shown that depopulating regions were significantly poorer on average than the rest of the country that they are located in, suggesting that the reverse of population growth, population decline, may well reduce economic development (European Union, 2008). However, when demographic typologies of population decline and growth were superimposed over economic trends in Europe, it was found that “there was no correlation between economic and demographic processes at regional level” (European Union, 2008, p. 54). This finding supports the population neutralism viewpoint.

The viewpoint that is adopted within the policy response literature is based on the optimistic paradigm that population growth fuels economic development. Regardless of the arguments between population and economic scholars of the validity of their viewpoints, there is a broad consensus amongst policy response researchers, who are primarily located in the planning field, that the optimistic interpretation (the growth paradigm) influences much of the policy response to population decline (Haase, 2008; Panagopoulos & Barreira, 2011; Rienits, 2009). Rink et al. (2012) found that strategies in Europe could be distinguished between “western holistic explicit growth strategies dealing implicitly with consequences of shrinkage and post socialist pro-growth strategies emphasizing job-creation based on attraction of external resources... ignoring causes and consequences of shrinkage” (p. 6). Both types of strategies focus on a growth paradigm but from different angles.

It is the opinion of the planning scholars that policymakers and planners see population growth as essential elements to support economic activity; consequently, accepting depopulation can be politically unappealing for governments at all levels (Haase, 2008; Hospers & Reverda, 2015; Panagopoulos & Barreira, 2011). According to Hospers and Reverda (2015), this attachment to the growth paradigm became entrenched in the legal and institutional framework of countries in reaction to population expansion. After hundreds of years of relatively low growth, populations in Europe began to grow more rapidly in the 18th century, but not in a steady or cohesive manner. Initially this rapid growth, which arose out of the demographic transition, was considered to be a significant problem, as it was unmanaged and had enormous social consequences. Governments and planners have by and large learnt how to manage population expansion and its social challenges. Continuous growth of population and economy became expected and also embedded in legal processes as a necessary and essential good for the functioning of society (Hospers & Reverda, 2015).

Although the growth paradigm is being challenged by depopulation and ageing in a number of countries, on the whole numerous scholars regard growth-orientated planning as still having supremacy in local government decision-making in many countries (Bernt et al., 2014; Haase, 2008; Hollander, Pallagst, Schwarz, & Popper, 2009; Johnson, Hollander, & Hallulli, 2014; Panagopoulos & Barreira, 2011; Schilling & Logan, 2008). Johnson et al. (2014) stated that this is because planners and policymakers do not accept depopulation as a reality or do not know how to anticipate the onset of population decline – or even know that it is on the horizon.

In the literature, policy responses to depopulation have been primarily grouped into three major response types (Beetz, et al., 2008; Bernt, et al., 2012; Hospers, 2014; Rink et al., 2012; Verwest, 2011). In general, the response types may be grouped as: (1) policies that take no action, through denying or ignoring that depopulation is an issue in their country or location; (2) policies that attempt to regenerate a location (these may be explicit or implicit); and (3) policies that accept that there is an issue of depopulation, accept that the underlying drivers are too strong to reverse and assert that the new state of population decline must be, in some form, managed.

Table 2 presents seven different policy response frameworks from selected literature. These policy responses have been observed by scholars in a range of countries and levels of government (national, regional and local) (Beetz et al., 2008; Bernt et al., 2012; Hospers, 2014; Rink et al., 2012; Verwest, 2011). Most of the literature examined European local government policy responses, with the exception of Matanle and Rausch (2011), who researched Japan's responses.

There are many similarities in the literature between policy response frameworks; however, each focused on different aspects. Verwest (2011) and Bernt et al. (2012) drew on political theory in developing their policy responses groups. Verwest (2011) considered that 'doing nothing' is akin to political stability, whereas attempting to combat population decline is shifting into the realms of conservative political action. When the decline is accepted and policy is adapted to deal with the consequences and management of shrinkage, Verwest (2011) contended that the policy action has become 'radical'.

Bernt et al. (2012) added a further dimension to the political framework by adding a spatial element. Their research in Europe revealed that it was common to have a policy of focusing investment either on declining areas or only on those areas that have the best chances of growth. Rink et al. (2012) and Hospers (2014) both provided a simplistic framework of policy responses, which has been adopted by this study: 'do nothing', 'countering' and 'accepting'. Hospers (2014) went one step further and included an 'utilising' response that adopts a positive viewpoint of shrinkage and attempts to take advantage of it.

Matanle and Rausch's (2011) response categories focus on the type of intervention actions that Japan has undertaken to combat depopulation at varying levels of government and community. Beetz et al. (2008) found in their research that there were four diverging points of view for responding to depopulation: the first saw decline as an opportunity for alternative lifestyles; the second considered that building regional competitiveness was essential, rather than allow regional closures; the third assumed people will leave a shrinking region to maximise their life conditions, creating a state of passive restructuring; and the last states that there should be mutual support between regions with strong and weak regions needing to be mutually supportive.

Table 2: The spectrum of policy responses to population decline

<p>Beetz et al (2008)</p> <p>Europe</p>	<p>Decline is an <u>opportunity for alternative lifestyles</u></p>	<p>Need to <u>build regional competitiveness</u> rather than allow regional closures</p>	<p><u>Passive restructuring:</u> people will leave a shrinking region to maximise their life conditions</p>	<p><u>Mutual support:</u> welfare is an indispensable good. Strong and weak regions need to be mutually supportive</p>
<p>Beetz et al (2012)</p> <p>Europe</p>	<p><u>Conservative:</u> growth orientated</p>	<p><u>Radical:</u> accepting or mediating</p>	<p><u>Focused:</u> investment in areas of decline</p>	<p><u>Focused:</u> investment in areas of the best growth potential</p>
<p>Hospers (2014)</p> <p>Europe</p>	<p><u>Trivialising:</u> shrinkage symptoms are not accepted and no action is taken</p>	<p><u>Countering:</u> all policy measures are aimed at fostering growth</p>	<p><u>Accepting:</u> adapting the content of policies to mitigate the negative effects of shrinkage</p>	<p><u>Utilising:</u> looking at the positives of shrinkage and taking advantage of it</p>
<p>Matanle and Rausch (2011)</p> <p>Japan</p>	<p><u>Redeveloping:</u> central government provides fiscal transfers to regional areas and funds development, particularly construction</p>	<p><u>Repopulating:</u> replacement migration policies from within the nation and internationally</p>	<p><u>Recovering:</u> acknowledging current circumstances and attempting to reinvigorate by using local attributes</p>	<p><u>Reinventing:</u> using innovative initiatives that focus on maximising the potential of local characteristics</p>
<p>Merseyside County Council (1979) in Rink et al. (2012)</p> <p>Britain</p>	<p><u>Passive decline:</u> continue previous policies</p>	<p><u>Urban regeneration:</u> try to reverse the depopulation trend but also deal with consequences</p>	<p><u>Managed dispersal:</u> accept decline in some areas and invest in those areas with growth potential</p>	
<p>Rink et al (2012)</p> <p>Europe</p>	<p><u>Do nothing:</u> either denial that a problem exists or acknowledgement but not respond</p>	<p><u>Reverse:</u> try to reverse the trend and stimulate population growth</p>	<p><u>Accept:</u> decline and manage the consequences</p>	
<p>Verwest (2011)</p> <p>Europe</p>	<p><u>Do nothing</u> (political stability): local government does not explicitly adapt its policies to deal with shrinkage</p>	<p><u>Conservative</u> local policy changes (<u>combat</u>): local government adapts its policies to increase population</p>	<p><u>Radical</u> local policy changes: when local government accepts shrinkage and adapts accordingly</p>	

As can be seen above there is variety in the response frameworks, but merit in aspects of all. An attempt has been made to synthesise all the concepts and categories from the seven frameworks into a new policy response typology that has three main categories – ‘do nothing’ (non-intervention), ‘countering’ or strategic intervention, and ‘accepting’ – with further subgroups or policy positions. A summary of the full range of policy responses is presented in Figure 1.

Figure 1: Policy response typology



Tables 3, 4 and 5 present a synthesis of the policy responses literature from Table 2. Table 3 covers the non-intervention policy responses. These range from passive non-intervention, such as ignoring or denial (Hospers, 2014; Rink, et al., 2012), to active non-intervention with two different expectations of the outcomes of market forces on a location – either the market will decide which towns survive, or the market will provide new opportunities and create a new equilibrium (Beetz et al., 2008).

The responses covered in Table 4 are all active intervention choices to counter depopulation, although they come from very different motivations. ‘Competitiveness’ attempts to manipulate market forces to stimulate the economies of regions and attract migrants (Beetz et al., 2008). However, as subnational decline spreads, regional competitiveness will come at the expense of other regions, as they fight over the same diminishing pool of people (Jackson et al., 2014). Conversely, ‘interconnection’ is based on regional development theory that strong and weak regions should provide mutual support and redistributive welfare, which is classed as an indispensable good (Beetz et al., 2008).

Table 5 covers a wide range of responses that accept depopulation is occurring and attempt to deal with the consequences. ‘Focusing’ is the

least radical of the accepting policy positions, accepting decline but targeting investment in growth potential areas. Population ageing driving the end of growth is a significant new aspect of population decline (Jackson, 2007). The ‘utilising’ response focuses on finding innovative solutions and opportunities to provide for this ageing dynamic or maximising the potential of local characteristics. ‘Managing’ tries to slow the rate of decline, retain the current population, and manage the consequences of depopulation.

Table 3: Spectrum of policy responses – Do nothing/non-intervention

Policy position	Explanation	Action	Political position (Verwest, 2011)
Denial	Denying that a problem exists (Hospers, 2014; Rink et al., 2012).	None	Stability
Ignoring	Knowing the problem is there but not actively considering it (Rink et al. 2012).	None	
Passive restructuring	Actively choosing not to intervene. Allowing the free market to choose which towns survive (Beetz et al., 2008).	None	
Adaptation	Actively choosing not to intervene with the expectation that the free market environment will create a new equilibrium and provide opportunities for alternative lifestyles in areas that can no longer function as a traditional economic unit. The local economy can adapt and provide new avenues to create value. Civil society can provide support functions where government services can no longer function (Beetz et al., 2008).	None	

Table 4: Spectrum of policy responses – Countering/intervention

Policy position	Explanation	Action	Political position (Verwest, 2011)
Competitiveness	Active intervention. Regional closure is a disadvantage leading to innovation blockages and competitiveness should be accentuated. The region should be integrated into supra-regional and global economic activities (Beetz et al., 2008)	Policy measures aimed at fostering growth (Hospers, 2014). Focus should be on product specialisation, deregulated working conditions and low workforce costs (Beetz et al., 2008)	Conservative Growth-orientated Combat
Interconnection	Active intervention based on the theory that free markets have no self-balancing mechanisms and the intrinsic value of weak regions. Redistributing welfare to weak regions is a necessity and an indispensable good. To reduce economic inequalities, regions that are strong and those that are weak should be mutually supportive (Beetz et al., 2008).	Focused investment in areas of decline (Bernt et al. 2012).	

Table 5: Spectrum of policy – Accepting/intervention

Policy position	Explanation	Action	Political position (Verwest, 2011)
Focusing	Accepting decline in some areas and investing in those areas with growth potential (Bernt et al., 2012; Merseyside County Council (1979) in Rink et al. (2012))	Focused investment in areas of the best growth potential (Bernt et al. 2012).	Radical

Policy position	Explanation	Action	Political position (Verwest, 2011)
Utilising	Shrinkage is accepted but opportunities and advantages to the situation are actively pursued (Hospers, 2014).	Using innovative initiatives that focus on maximising the potential of local characteristics (Matanle & Rausch, 2011).	
Managing	Shrinkage is accepted and policies are adapted to slow the rate of decline and manage the consequences of depopulation (Rink et al., 2012; Verwest, 2011).	Focus is on how to retain the current population, provide services and maintain/enhance quality of life (Rink et al., 2012; Verwest, 2011).	
Exiting	Exit strategies: ranking communities and retiring those communities that are no longer viable (Matanle & Rausch, 2011).	This is currently a theoretical position – few actions were located.	

The final row of Table 5 is ‘exiting’ strategies (i.e. the development of exit strategies), which are the most radical of all the policy responses. This is primarily a theoretical proposition, as although three potential exit strategies were located during the course of this study, two of these examples were prior to the 1960s and implemented under emergency conditions. A further, more recent example was implemented in response to very specific social-economic circumstances and as such is unlikely to be able to be translated generally to other communities. This policy position might be used for communities that have reached terminal decline and there is a need for strategies to withdraw communities that are no longer viable.

Central government population policies

This section and those following explore how the governments of eight OECD countries are responding to the level of depopulation in their countries through central government population policies and responsive actions.

The World Population Policy Division of the United Nations surveys governments biennially about their views on aspects of population change, and the related policy positions they adopt (United Nations, 2013). Table 6 shows selected central government population-related policies and demographic indicators from Australia, Canada, Germany, Japan, the Netherlands, New Zealand, the UK and the United States. The population-related policies included in Table 6 are policy on growth, policy on fertility level, measures to address population ageing, and policy on immigration. In the 2013 World Population Policies survey, there is no information logged with respect to these eight countries' views on growth, fertility or immigration, and therefore these questions were not included in the table. These countries did respond to the question "level of concern about ageing of the population", and this was included. There were three possible responses to "measures to address population ageing": (1) Change in statutory retirement age, (2) Reform in the pension system, or (3) Neither. (also see Appendix 2).

The demographic indicators selected to explore how these policies relate to the country's level of population change were total fertility rate, rate of natural increase, proportion of the population that is aged 65+, proportion of the population aged 0–14, net migration for 2010–2014, annual growth rate, and the year that national population decline began, if indeed it did.

In general, how countries respond to national population change relates to the depth and length of time that the country has been experiencing negative demographic indicators (or indicators that are showing very low fertility and slowing growth). For instance, Germany has had a TFR below replacement level since the early 1970s and the RNI has been negative since 1974 (Figures 2 and 3, respectively). The youth population dropped below 15 per cent of the total population in the early 2000s (Figure 4) and the structural ageing of the population is progressing with more than 20 per cent of the population aged 65+ since 2008. However,

due to net migration gains, the country only shifted into national population decline in 2011 (Table 6). The demographic indicators suggest that the levels of migration required to attempt to shift the country back into growth are likely to become unsupportable as natural decrease becomes entrenched.

Table 6: Key country population policies and key demographic indicators

	Australia	Canada	Germany	Japan
Total population, 2013 (millions)	23.3	35.2	82.7	127.1
Total fertility rate, 2013	1.9	1.7	1.4	1.4
Rate of natural increase, 2010 (1000s)	6.9	3.7	-2.0	-0.1
Elderly population (65+) as % of total population, 2013	14	15	21	25
Youth population (0–14) as % of total population, 2013	19	16	13	13
Net migration 2010–2015 (1000s)	750	1,100	550	350
Percentage annual growth rate, 2013	1.31	1.00	-0.11	-0.08
Year national population decline began	N/A	N/A	2011	2010
Policy on growth*	No intervention		Raise	Raise
Policy on fertility level*	Raise	Non i/v	Raise	Raise
Level of concern about ageing of the population*	Major	Major	Major	Major
Measures to address population ageing**	2	Neither	1	1, 2
Policy on immigration*	Maintain	Maintain	Maintain	Maintain

Table 6: Key country population policies and key demographic indicators (cont'd)

	Netherland	New Zealand	United Kingdom	United States
Total population, 2013 (millions)	16.8	4.5	63.1	320.1
Total fertility rate, 2013	1.8	2.1	1.9	2.0
Rate of natural increase, 2010 (1000s)	3.1	8.1	3.1	5.8
Elderly population (65+) as % of total population, 2013	17	14	17	14
Youth population (0–14) as % of total population, 2013	17	20	18	20
Net migration 2010–2015 (1000s)	50	75	900	5,000
Percentage annual growth rate, 2013	0.27	1.02	0.57	0.81
Year national population decline began	N/A	N/A	N/A	N/A
Policy on growth*	No intervention		Lower	Non i/v
Policy on fertility level*	Non i/v	Maintain	Non i/v	Non i/v
Level of concern about ageing of the population*	Major	Major	Major	Major
Measures to address population ageing**	1, 2	Neither	1, 2	Neither
Policy on immigration*	Lower	Maintain	Lower	Maintain

Sources: Total population, total fertility rate (children per woman), annual growth rate – World Population Policies 2013 database.

Net migration is the net total of PLT migrations during the period; data are five-year estimates for 2010–2015– United Nations, Department of Economic and Social Affairs, Population Division, International Migration – Population estimates – Total net migration.

Elderly population and youth population 2013 – World Bank (2015) indicator database.

Rates of natural increase – United Nations World Population Prospects 2012 database.

*All policies – World Population Policies 2013 survey database.

Notes: **Measures adopted to address population ageing: (1) Change in statutory retirement age, (2) Reform in the pension system, (3) Neither.

For further information on definitions of policy variables, see definitions in Appendix 2.

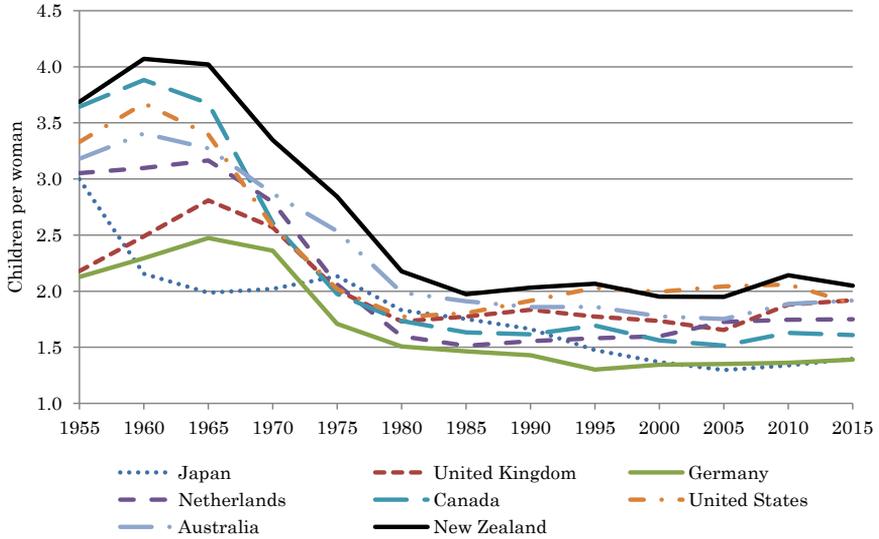
Table 6 shows that Germany responds to this situation with policies of raising fertility and changing the statutory age of retirement. Interestingly, the country is maintaining the policy on immigration, perhaps due to political reasons as increases in migration flows may be unappealing to the polity of the country.

Japan had a slower drop in below-replacement fertility than Germany (Figure 2), but has aged more rapidly than Germany, and in fact more than any other country in this group, shifting from just over 5 per cent of the population aged 65+ years in 1960 to more than 25 per cent by 2013 (Figure 5).

Japan's RNI only shifted into decline in 2010 in the same year that the country dropped into national population decline (Table 6). Japan has responded with fertility and ageing policies but has not changed its migration policies. The types of policy actions that countries choose may relate to their historical context. For instance, Japan has had historically restrictive migration policies which, even in the face of severe population ageing and future shrinkage, it is reluctant to relax (Soble, 2014). As a consequence, migration is low on Japan's agenda for slowing population decline.

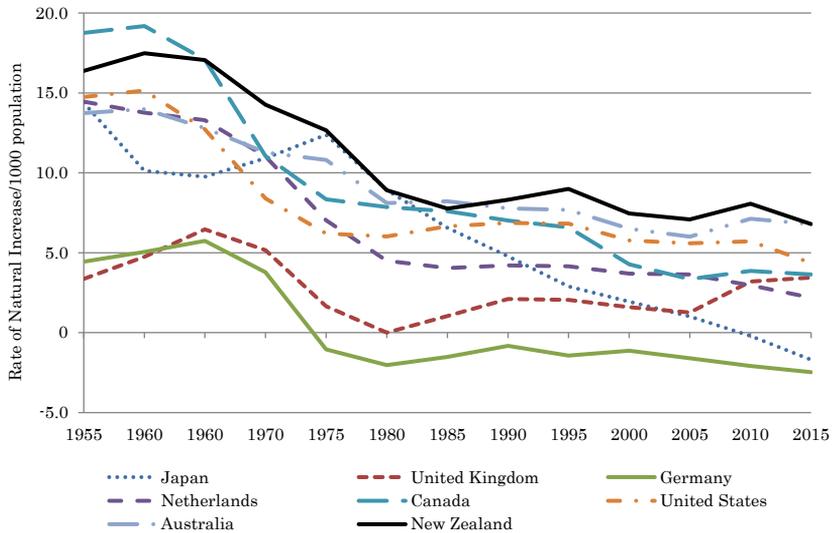
At the other end of the scale, New Zealand and the USA have the strongest demographic indicators of growth (relatively high fertility and very high net migration gains per capita), and although these countries express concern about the ageing of their populations, this has not been backed by related action.

Figure 2: Estimated total fertility rate for selected OECD countries 1955–2015



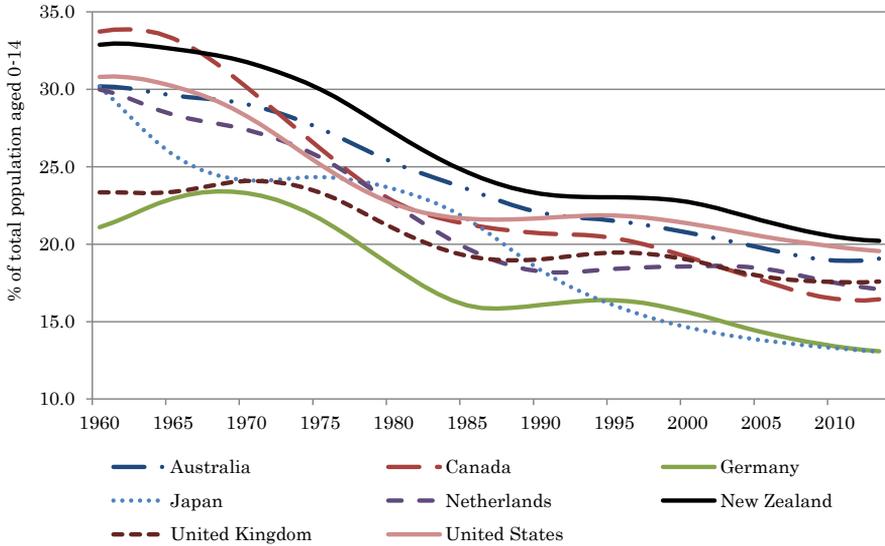
Source: World Population Prospects: The 2015 revision, key findings and advance tables (United Nations, 2015).

Figure 3: Rate of natural increase for selected OECD countries 1955–2015



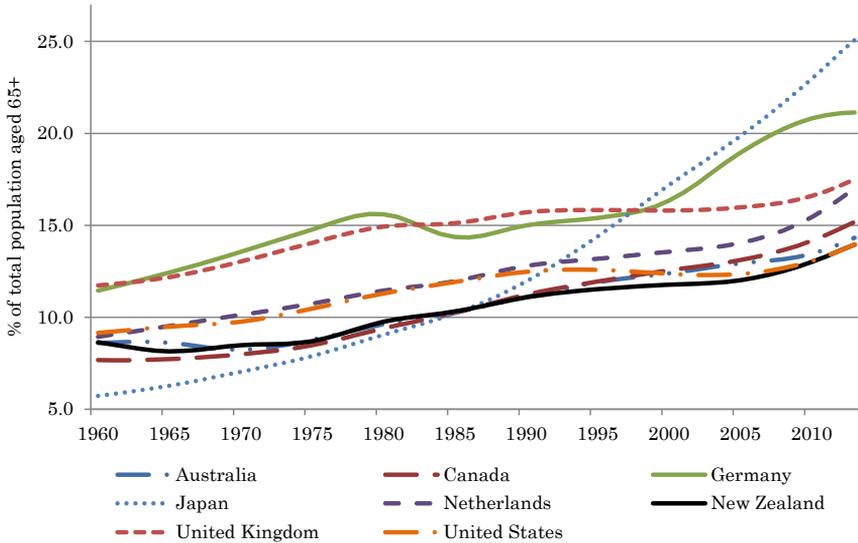
Source: World population prospects: The 2015 revision, key findings and advance tables (United Nations, 2015).

Figure 4: Youth population rate (percentage aged 0–14 years) for selected OECD countries 1960–2013



Source: *World Bank indicators database* (World Bank, 2015).

Figure 5: Percentage of population aged 65+ for selected OECD countries 1960–2013



Source: *World Bank indicators database* (World Bank, 2015).

The relationship between demographic indicators and policy action is not always clear. For instance, Australia's demographic indicators are also still relatively strong, yet the country has an explicit policy to raise fertility levels and is reforming its pension system in terms of age of access. Canada, with weaker demographic indicators and below-replacement-level fertility since the 1970s (Figure 2), and with a smaller rate of natural increase (3.7) and an annual growth rate of 1 per cent, does not have any interventions for fertility or growth.

The fertility and migration policies that are being actioned in these countries could be considered countering responses to forthcoming depopulation as they are attempting to boost the total population through demographic (and migratory) measures. The measures to address population ageing could be considered to be an accepting response as these are adapting to the changing age structures and attempting to spread the fiscal load.

Central government policy response to spatial distribution

All of the countries analysed are experiencing regional depopulation of varying degrees, but they are responding to it in a range of different ways. The United Nations World Population Policy Division surveys governments about their views on the spatial distribution of their countries, and the range of policies that they implement to change the spatial distribution. Table 7 lists key regional demographic indicators and central government spatial redistribution policies. The annual urban population and rural growth rates were used to give an indication of whether the rural areas were depopulating in each country.

Table 7 shows that for most of the countries in this sample, there is positive growth in the urban areas combined with decline in rural populations, a finding that supports the theory of rural-to-urban drift. Only Germany is losing population in both rural and urban areas. Although Table 7 does not show the subnational spatial variation, the literature makes it clear that Canada and New Zealand are also experiencing subnational population decline in specific peripheral locations in their respective countries (Jackson, 2014; Polese & Shearmur, 2006; Warkentin, 2012).

The biggest drop in the annual rural population growth rate is in Japan, which shows a marked -7 per cent drop in just one year, indicating significant losses. The out-migration from rural areas may have been exacerbated by the ongoing effects of external shocks, such as the Fukushima nuclear disaster and East Japan earthquake and tsunami which have devastated economies in those areas affected (Matanle, 2011).

Only the policy on migration from rural to urban places was included in Table 7 out of the range of possible policy choices as this was the only policy question that any country implemented in the spatial distribution data set.

All of the countries, with the exception of the US, expressed concern with the spatial distribution of their populations. However, just because countries see a need for a minor change to their spatial distribution, they do not necessarily back it up with action. For instance, Australia, Canada, the Netherlands, New Zealand and the UK all desire minor change but only Australia and Canada have policies to lower migration from rural to urban places. In contrast, Germany and Japan desire major change to their spatial distribution and have adopted policies to lower migration from rural to urban places.

These spatial distribution policies suggest that Australia, Canada, Germany and Japan 'accept' that they are experiencing rural out-migration and depopulation and are using 'countering' strategies to attempt to change the situation. Although Canada did not have overall rural out-migration in 2013, a deeper analysis would show that the country has been suffering depopulation at a subnational level (Polese & Shearmur, 2006; Warkentin, 2012).

It is not clear whether the Netherlands and the UK accept that there is a need to deal with rural out-migration. The United Nations World Population Policy Division does not record any policies to combat rural depopulation from these countries. Finally, the response of the US suggests that the federal government does not accept that depopulation is an issue or that there is a need to intervene in the spatial distribution of the country.

Table 7: Key spatial distribution indicators and central government spatial distribution policies

	Australia	Canada	Germany	Japan
Population density (per sq km)	3	4	232	336
Urban population (%)	89	81	74	93
Annual urban population growth rate (%)	1.49	1.06	-0.03	0.57
Annual rural population growth rate (%)	-0.05	0.36	-0.70	-7.61
View on spatial distribution	Minor change desired	Minor change desired	Major change desired	Major change desired
Policy on migration from rural to urban places	Lower	Lower	Lower	Lower
	Netherlands	New Zealand	United Kingdom	United States
Population density (per sq km)	404	17	260	33
Urban population (%)	84	86	80	83
Annual urban population growth rate (%)	0.74	1.09	0.76	1.14
Annual rural population growth rate (%)	-2.08	0.70	-0.03	-0.55
View on spatial distribution	Minor change desired	Minor change desired	Minor change desired	Satisfactory
Policy on migration from rural to urban places	No intervention	No intervention	No intervention	No intervention

Source: *World population policies database* (United Nations, 2013).

Subnational policy approaches

Many countries do not have explicit population policies for dealing with subnational depopulation. The policy approaches that central governments use to address subnational population issues are often indirect policies that fall into the broader definition of ‘population responsive action’ and primarily focus on a development agenda (Lucas & Meyer, 1994).

Regional development policy has climbed to the top of the international policy agenda with the acknowledgement of the interconnectedness of national competitiveness for regional areas within countries (OECD, 2009). Governments have attempted to reduce regional disparities over many decades but increasing globalisation, decentralisation and fiscal constraints have put pressure on redistribution policies (OECD, 2010). National governments have shifted policy towards encouraging regional growth by adapting to the requirements of individual

regions and building on their regional potential. In light of this, the top-down subsidy approach is being superseded by a growing trend of decentralisation to the regional level and the devolution of tasks to local governments (OECD, 2010).

There are wide disparities between countries, evidenced by their regional policy approaches. Table 8 and the country response profiles in Appendix 1 link the theoretical response framework from this section with the actual responses from the selected countries. What type of intervention pathway is chosen for responding to depopulation is likely to be influenced by the political framework of the country. Previous studies have found that countries that follow neoliberal policies more closely tend towards an expectation of self-help for local communities (Cheshire, 2006).

Countries have a number of strategies to deal with countering population decline, with some favouring active management of the situation while others preferring to let market forces dictate. Some countries have state-directed responses, driven from central government with countries forcing a 'top down' approach where policy is formed at a national level and the regions are instructed to comply. Other countries have a 'bottom up' approach where the policy agenda is facilitated by the state, giving the responsibility for developing regional development plans to their regions.

Some countries have a constitutional commitment to regional balance, such as Germany. Other countries, like the Netherlands, are emphasising growth-orientated policies to drive competitiveness in their regions. New Zealand and the UK are also following this pathway. Another concept, 'endogenous development', is gaining popularity in countries such as Australia and Norway. This concept aims to combine competitiveness with the potential of regions along with social and environmental sustainability (OECD, 2010).

All countries, with the exception of Germany, accede to a 'competitiveness' policy position. Canada also adopts an 'interconnection' paradigm, which is facilitated by the Federation rather than directed, while the UK is quite state directed. The USA has an assortment of responses and policies, with low intervention and driven by the local level with some input from regional-level funding bodies (OECD, 2014).

Table 8: Central government regional policy approaches

	Australia	Canada	Germany	Japan
Policy position	Competitiveness, interconnection	Competitiveness, interconnection	Focusing, utilising, managing	Competitiveness, interconnection, utilising
Facilitation of regional policy approaches	Regionally driven – some federal facilitation	Federation facilitation	Regionally driven	Mixed, national and local
	Netherlands	New Zealand	United Kingdom	United States
Policy position	Competitiveness, interconnection	Ignoring, competitiveness	Competitiveness	Passive restructuring, adaptation, competitiveness
Facilitation of regional policy approaches	Regionally driven	Nationally driven	State driven and state directed	Regionally or local-level driven

The policies a country chooses are also dependent on the economic development goals and objectives of that country. These may be numerous and potentially conflicting. For example, regional policy in the UK aims “to contribute to high and stable levels of growth and employment nationwide by ensuring that each region is achieving its full potential”, whereas the European Union regional policy objectives are to “support cohesion, competitiveness and employment, and cross-border co-operation” (EC 1083/2006) (OECD, 2009, p. 34). More in-depth country profiles can be found in Appendix 1. These discuss the role that central government plays in the regions of each country and recent policy developments. These profiles have been developed from the OECD’s *Regional Outlook* (2014), as well as relevant literature.

Local government policy response

There is often a divide between the national-level response to depopulation and regional or local response (Ferry & Vironen, 2011). In general, countries that are part of the European Union, as well as Japan, have national-level support for dealing with depopulation, whereas policy

responses in the USA have been primarily at the local level (Editorial, 2013). The USA is the only country that considers the spatial distribution of the country to be satisfactory; however, the local response is vastly different with a large number of local governments experimenting with interventions to attempt to either counter or accept depopulation in their area (Hollander et al., 2009; Johnson et al., 2014). In the Netherlands, although the country does not have internal migration interventions, in some shrinking regions of the country, attempts are being made to reduce the housing stock (Dreijerink, Van der Noort, & Kortman, 2012).

As well, the choices that governments make about population policies at national level, particularly for highly centralised governments, can affect the ability of regional or local-level governments to initiate their own actions (Panagopoulos & Barreira, 2011). In a study of government responses to depopulation in four different cities from four different countries in Europe, Bernt et al. (2014) found that the degree of local autonomy in decision-making varied greatly between the locations due to the political framework of the host country. For instance, in the UK, the local governments are controlled by the central government, whereas in Germany, a considerable amount of power is devolved to the local level. The local-level response may thus be constrained by the national political framework (Ferry & Vironen, 2011).

Conclusion

This paper has identified three main theoretical policy responses to depopulation – do nothing, countering, and accepting strategies – and showed how the range of responses varies by level of government and in response to the level of depopulation experienced in the country. There is a strong relationship between depth and length of depopulation and the response to depopulation.

The analysis of different levels of government response to population decline has shown that some countries are further ahead than others in accepting population decline and that national governments are still in the early stages of developing policies to manage age-driven population decline. There is often a divide between central government and local government attention and efforts to address depopulation, and in some cases, this can restrict local-level action.

The growth paradigm, on the whole, appears to dominate the governmental response to depopulation. However, there does not seem to be a systematic agenda within countries to counter or accept decline; rather, a mix of population policies and responsive policies are adopted at any level deemed appropriate to attempt to change the demographic future. The growth paradigm will be challenged greatly in the future by servicing depopulating regions with ageing population structures and declining finances.

Notes

- 1 Matanle (2011).
- 2 Hospers (2014); Matanle and Rausch (2011).
- 3 Total fertility rate is the average number of live births a woman would have by age 50 if she were subject, throughout her life, to the age-specific fertility rates observed in a given year. Its calculation assumes that there is no mortality.
http://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/demographics/total_fertility_rate.pdf.
- 4 Low fertility can be defined as “total fertility of 2.0 children per woman or less” (United Nations, 2014).

Appendix 1 – Country Policy Response Profiles

Appendix 1a: Australia

Australia	Regional level depopulation	
Governance structure	Federation	Layers of government: 3
Policy position	Competitiveness, interconnection	
Facilitation of regional policy approaches*	Regionally driven – some state facilitation	
Central government role	Australia is primarily focused on a paradigm of growth (Weyman & Martinez-Fernandez, 2012). Federal government supports community development and engagement, and state governments have their own regional development initiatives. Interventions have been limited in scope and financial commitment (Collits, 2011). Most jurisdictions have adopted a bottom-up partnership, local-context approach, with self-help for regions and communities; a focus on delivering services and	

	managing change, as well as on regional leadership; and strategies based on developing regional competitiveness (Cheshire, 2006; Collits, 2002; OECD, 2010).
Recent policy developments	A new ministry was created in 2013 responsible for regional development covering infrastructure, regional development, local government, territories and disaster recovery (OECD, 2014). There are regional migration incentives and special visa categories for international migrants.

Appendix 1b: Canada

Canada		Regional level depopulation
Governance structure	Federation	Layers of government: 3
Policy position	Competitiveness, interconnection	
Facilitation of regional policy approaches*	Federation facilitation	
Central government role	<p>Canada aims to reduce regional disparities and provide equal opportunities for every Canadian, founded on principles in their Constitution Act (OECD, 2010). Its focus is on an integrated approach to rural policy so that rural priorities are taken into consideration in the development of government policy, with an aim for policy coherence across ministries (OECD, 2006). There is a particular focus on innovation, skills development, economic diversification, productivity and business development (OECD, 2014).</p> <p>Six federal regional development agencies (RDAs) support regional development policy in addition to the actions delegated to provinces/localities. Federal RDAs focus on supporting innovation, trade and investment, business development, and community/local economic development (OECD, 2014). Federal RDAs tend to focus on actions in rural and remote areas (OECD, 2010).</p>	
Recent policy developments	<p>The government supports the development of rural business. The Community Futures Program promotes bottom-up economic development in rural areas.</p> <p>The Western Innovation Initiative (WINN) provides incentives to get new technologies to the marketplace (OECD, 2014).</p>	

Appendix 1c: Germany

Germany		National level depopulation
Governance structure	Federation	Layers of government: 4
Policy position	Focusing, utilising, managing	
Facilitation of regional policy	Regionally driven	

approaches*	
Central government role	Germany has a constitutional commitment to regional balance (OECD, 2010). The main regional policy instruments focus on improving conditions in weaker areas to allow economic development (Ferry & Vironen, 2011). Germany developed a programme to address inadequacies in existing agricultural and other sectoral policy approaches. A number of small model areas were selected and local partnerships established to improve the focus of public policy for the region (OECD, 2006). Although Germany is actively managing shrinkage with a particular focus on housing issues, the regions are responsible for mergers of local governments and most tasks are delegated to the regions (Wiechmann & Volkman, 2012). There is a growing urban bias to Germany's regional development policy and the country's current approach is mainly sectoral (OECD, 2007).
Recent policy developments	There was a reduction in investment subsidies in 2013. Funding comes from the EU Structural Funds. There is a programme for the Improvement of Regional Economic Structure between the federal government and the regions (OECD, 2014).

Appendix 1d: Japan

Japan	National level depopulation
Governance structure	Unitary Layers of government: 3
Policy position	Competitiveness, interconnection, utilising
Facilitation of regional policy approaches*	Mixed, national and local
Central government role	The central government has a strong role in Japan. There is a focus on revitalisation of regions through competitiveness, promotion of private investment, response to ageing communities, and response to energy issues. The central government developed the National Spatial Strategies, which outline grand designs at national level for next 10 years. Eight regional plans define designs for individual regions under the National Spatial Planning Act. Several laws govern specific types of regions and frameworks for development (OECD, 2014). The central government drove local government reforms and mergers (municipalities reduced from 3232 in 1999 to 1718 in 2014) (OECD, 2014).
Recent policy developments	Some recent policy developments include the Future City initiative – sharing experiences from cities that have overcome key regional challenges. <i>A Grand Design for National Spatial Policy</i> was published in July 2014. A review of the statutory national spatial plan is also to be launched (OECD, 2014).

Appendix 1e: Netherlands

Netherlands	Regional level depopulation	
Governance structure	Unitary	Layers of government: 3
Policy position	Competitiveness, interconnection	
Facilitation of regional policy approaches*	Regionally driven	
Central government role	<p>The objective of regional policy in the Netherlands is to stimulate economic growth in all regions (OECD, 2010). The Netherlands has been pushing a decentralisation agenda and a number of functions have been shifted to the subnational government levels: spatial planning, regional development, traffic and transport, and environment (OECD, 2014). National-level 'Top Sector' policy focuses on supporting sectors that achieve the most for the Netherlands economically and maximising these. The regions are responsible for strategies for regional development or shrinkage (OECD, 2014).</p>	
Recent policy developments	<p>The government released the <i>National Policy Strategy for Infrastructure and Spatial Planning</i> (SVIR) in 2012. This document outlines the national priorities by the central government. Governance structures are in the process of being reformed to reduce the number of provinces and municipalities as well as removal of other administrative bodies that exist between the provinces and local government (OECD, 2014).</p>	

Appendix 1f: New Zealand

New Zealand	Regional level depopulation	
Governance structure	Unitary	Layers of government: 3
Country level policy response	<p>Do nothing/intervention – competitiveness Low intervention – free market policies Nationally driven (MBIE, 2014)</p>	
Level of intervention	<p>There are strong national policies for economic growth but few policies that focus on depopulation in regional areas.</p>	
Recent policy developments	<p>In 2013, the New Zealand Government began a Business Growth Agenda with six key elements: export markets, innovation, infrastructure, skilled and safe workplaces, natural resources, and capital (MBIE, 2014). In particular, the Government is focusing on attracting investment to take advantage of regional specialities (Joyce, 2014).</p>	

Appendix 1g: United Kingdom

UK	Regional level depopulation	
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Governance structure	Unitary	Layers of government: 4
Policy position	Competitiveness	
Facilitation of regional policy approaches*	The United Kingdom comprises four countries – England, Scotland, Wales and Northern Ireland – and has a highly complex subnational structure and policy approaches that differ significantly between countries. In England, the objective is to balance growth promotion while reducing the gap between regions; Scotland focuses on reducing regional disparities, while Wales recognises the need to improve prosperity and quality of life for all sub-regions (OECD, 2010).	
Central government role	In England, there is an Integrated Regional Strategy. Some place-based policies are used but mostly top down. There has been a large-scale reorder of local agencies that deal with regional development. Some communities will be allowed greater planning scope at the local level. Scotland has been actively countering depopulation and has a National Planning Framework. Wales has a Spatial Plan which adds in policy coordination at the regional level (OECD, 2010).	
Recent policy developments	Since 2010, the nine regional development agencies have been abolished in England and focus has been shifted to local enterprise partnerships instead that will be able to decide on local priorities for investment in infrastructure. There has been no clear regional development policy framework since the regional development agencies were abolished. A Technology Strategy Board was created in 2013 to build innovation. Twenty-four enterprise zones were created with tax incentives and simplified local planning regulations (OECD, 2014).	

Appendix 1h: United States

USA	Regional level depopulation	
Governance structure	Federation	Layers of government: 4
Policy position	Passive restructuring, adaptation, competitiveness	
Facilitation of regional policy approaches*	Regionally or local-level driven	
Central government role	There is no overarching framework for regional policy. Federal policies may provide infrastructure or planning investment to areas that are experiencing economic decline (OECD, 2010). There is a wide range of responses to depopulation in the USA at the local level. For the most part, there is passive restructuring or an expectation of adaption. Some areas are attempting to counter or actively accept with strategies that deal with reducing infrastructure or developing places that are attractive for ageing populations.	
Recent policy	At the federal level, there has been some attempt at greater	

developments	coordination and integration of policies for regional development, with a general shift towards place-based policy. There has also been a greater focus on regional innovation clusters (OECD, 2014). The White House's Neighbourhood Revitalisation Initiative – areas called promise zones – is an attempt to attract private investment, develop affordable housing and create jobs (OECD, 2014).
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Appendix 2 – Policy Variables for the World Population Policies 2013

Variable name	Variable definition	Response categories
Policy on growth	Indicates the Government's stated policy to influence the rate of population growth in the country.	Too low Satisfactory Too high
Level of concern about ageing of the population	Indicates the Government's level of concern about the growing size or the proportion of older persons in the population and consequences for health and social welfare provisions. In cases where the current proportion of older persons is relatively small, Govt's concerns about the challenges that a growing older population will pose in the future are included.	Major concern Minor concern Not a concern
Measures to address population ageing	Indicates whether the Government has adopted specific measures in the last five years to address population ageing in the country.	1. Change in statutory retirement age 2. Reform in the pension system 3. Neither
View on spatial distribution	Indicates whether the Government considers the spatial distribution of population within the country to be satisfactory or whether it desires a change.	Major change desired Minor change desired Satisfactory
Policy on migration from rural to urban areas	Indicates the Government's policy to influence the flow of migration from rural to urban areas within the country. Migration from rural to urban areas is not applicable in countries with 100 per cent urban population.	Raise Maintain Lower No intervention Not applicable
Policy on immigration	Indicates the Government's policy to influence the level of documented immigration into the country.	Raise Maintain Lower No intervention

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Population Change and Migration in Kiribati and Tuvalu, 2015–2050: Hypothetical scenarios in a context of climate change

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AND ROBERT DIDHAM*

Abstract

Futures for countries comprised entirely of coral atolls and reef islands are looking increasingly bleak as governments across the globe struggle to address the challenge of reducing emissions of greenhouse gasses within a time frame that will allow low-lying tropical islands to withstand the degradation caused by slowly rising sea levels and increasing acidification of the oceans. For almost a decade, the immediate past president of Kiribati, the Hon. Anote Tong, has been arguing for increased opportunities for I-Kiribati to be able to migrate with dignity. He and other leaders of atoll territories have been determined their citizens will not be classified as ‘climate’ or ‘environmental’ refugees. In this paper, a range of hypothetical scenarios for net migration losses are explored to assess the magnitudes of voluntary movement required to gradually stabilise and then begin to reduce populations in Kiribati and Tuvalu, two central Pacific atoll countries that currently have very little guaranteed access to permanent residence in any other country.

The analysis shows that small net migration losses can have a major impact on the small base population of Tuvalu. In the case of Kiribati, with a population 10 times the size of that in Tuvalu, the net losses have to be at levels never experienced in that country before if they are to play a significant role in stabilising population growth and eventually contributing to population decline. A greater understanding of the relationships between net migration and population growth in these two countries is essential if the desired strategy of migration with dignity, rather than reactive policies to resettle communities experiencing severe hardship linked with environmental degradation, is to be achieved.

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In December 2015, aspirational commitments to curb greenhouse gas emissions were made at the 21st Conference of the Parties to the UN Framework on Climate Change in Paris, partly as a result of pressure from the leaders of small island states. There are four ‘atoll’ island states and territories in the Pacific that are already being affected by environmental degradation associated with climate change: Kiribati, Marshall Islands, Tokelau and Tuvalu.¹ The inhabitants of two of these currently have open access to a former colonial power – the United States in the case of the Marshallese, and New Zealand in the case of the Tokelauans (Burson & Bedford, 2013). The inhabitants of Kiribati and Tuvalu, which were administered by Great Britain as the Gilbert and Ellice Islands Colony (GEIC) until the late 1970s, do not have open access for long-term residence to any country within or outside the Pacific region.²

The populations of Kiribati and Tuvalu have been growing rapidly in recent decades and are projected to almost double again by year 2050 according to the Secretariat of the Pacific Community’s (SPC) latest projections (SPC, 2013). At the time of their last censuses, Kiribati’s population was 103,058 (2010) and Tuvalu’s was 10,564 (2012). In both cases, their populations had more than doubled since the mid-1970s when a decision was made to create the two separate states of Kiribati and Tuvalu when Britain’s colonial administration of the Gilbert and Ellice Islands ceased in 1978 (Table 1).³

The SPC’s latest projections have Kiribati’s population reaching 208,000 by 2050, and Tuvalu’s growing to 19,600. For countries comprised entirely of coral atolls and reef islands, with half their respective resident populations living in urban areas on narrow strips of coral on the atolls of Tarawa (Kiribati) and Funafuti (Tuvalu), ongoing rapid population growth and increasing urbanisation pose major challenges for sustainable social and economic development (Table 1, Figures 1–3). These challenges, which have existed for some time now, are being exacerbated by the degradation of atoll and reef island environments as a result of a combination of overcrowding in the urban areas, increasing erosion of the foreshores where settlement is often concentrated, and progressive damage to reef ecosystems caused by increasing acidification of the oceans with global warming.

Table 1: Population growth and urbanisation, Kiribati and Tuvalu, 1968-2010/12

Census year	Enumerated population		Percentage urban	
	Kiribati	Tuvalu	Kiribati	Tuvalu
1968	47,735	5,782	22.2	14.3
1978/79	56,212	7,349	31.4	28.8
1990/91	72,335	9,043	38.6	42.5
2000/02	84,494	9,561	47.6	46.9
2010/12	103,058	10,782	54.1	57.1

Sources: Censuses for the years shown.

Notes: 1) The census data for 1968 refer to the enumerated population in the Gilbert and Ellice Islands Colony (GEIC). In 1978, the Gilbert Islands, the Phoenix Islands and the Northern Line Islands (see Figure 1) were renamed Kiribati (the Gilbertese transliteration for 'Gilbert') and the Ellice Islands were renamed Tuvalu. In 1968, there was a small district headquarters on Funafuti, which became the base for the capital of Tuvalu in 1979. The capital of the Gilbert and Ellice Islands Colony was Tarawa, and the southern part of that atoll continued as the capital of Kiribati following independence.

2) Since the 1990s, there have been various attempts to develop a second urban area in Kiribati on Kiritimati Island (Christmas Island) in the Northern Line Islands. The population on Kiritimati has been included in the urban population for Kiribati since 1990 in the table above. In 2010, the enumerated populations of South Tarawa and Kiritimati were 50,182 and 5586, respectively, while Funafuti's population in 2012 was 6152.

3) Censuses in Kiribati are shown for 1978, 1990, 2000 and 2010 while those for Tuvalu are shown for 1979, 1991, 2002 and 2012.

Context for Some Hypothetical Scenarios

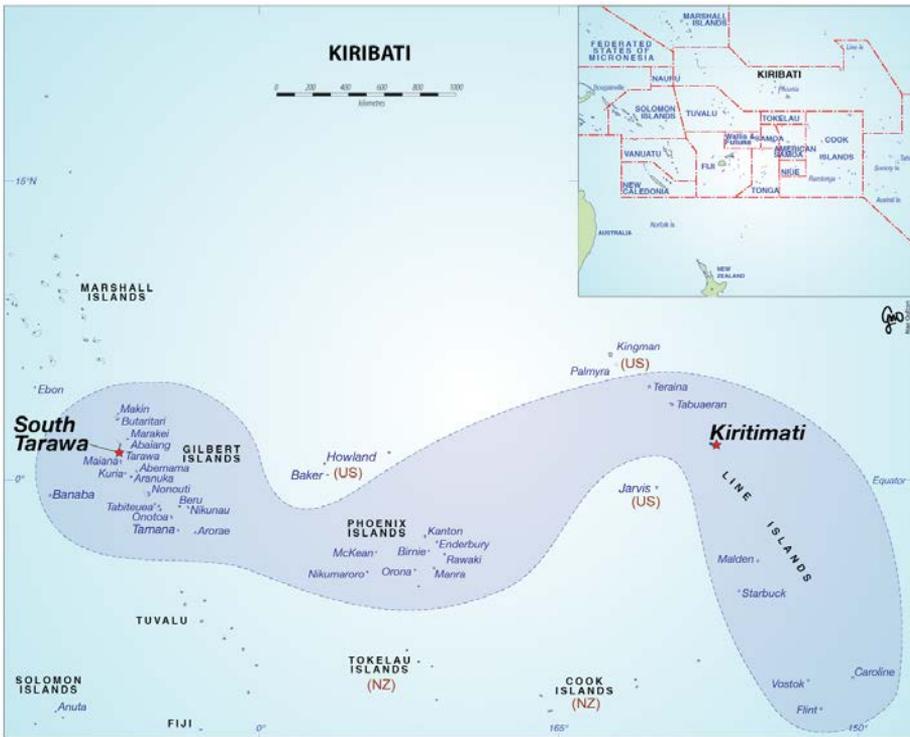
This paper explores the impact of some hypothetical scenarios for net losses of population through international migration on the growth of population in Kiribati and Tuvalu. The primary objective is to establish the levels of net migration that might be required to achieve stable and then declining populations in the two countries by 2050. An underlying assumption is that within the next 35 years, increasing numbers of I-Kiribati and Tuvaluans will choose to leave their atolls and reef islands in the interests of finding homes in countries where there are better prospects for their families to maintain sustainable livelihoods in the face of climate change.

This assumption is grounded in a well-established policy in Kiribati which former Te Beretitenti (President) Anote Tong expressed in

his address to the 68th United Nations General Assembly on 25 September 2013:⁴

While we are taking adaptation measures to ensure that Kiribati remains habitable for as long as possible, prudence demands that we prepare for the future of our people. We are looking to improve the skills of our people to a level where they are able to compete for jobs in the international labour market. We want our people to have the option to migrate with dignity.

Figure 1: Kiribati, location and major urban areas

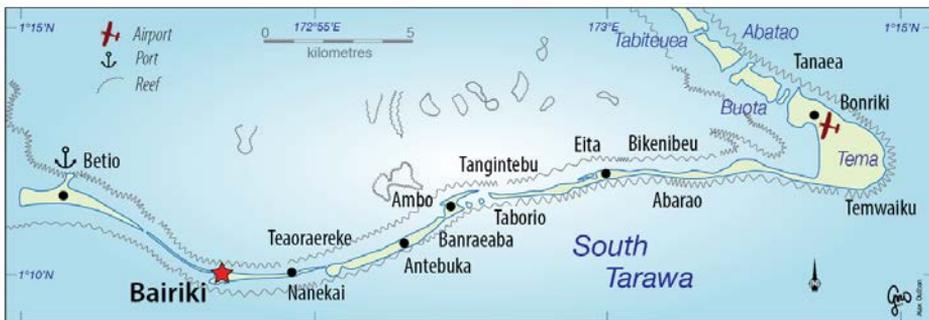


Both countries have long histories of labour migration, especially for work on islands where phosphate was being mined in the Pacific until the late 1990s and, since the establishment of a marine training centre on Betio in south Tarawa in 1967, as seafarers working mainly as deck ratings on merchant marine freighters (Figure 2).⁵ Both countries have been experiencing difficulties obtaining short-term as well as long-term employment opportunities overseas in recent years given the cessation of large-scale phosphate mining on Nauru and rationalisation of the

maritime freight business with the shift to ever-larger container vessels and competition from alternative sources of labour. Both countries have recently had support from the International Labour Organization (ILO) with the preparation of National Labour Migration Policies (NLMP) and both are actively seeking greater access to decent temporary and long-term employment overseas, especially for their burgeoning young adult populations.⁶

An important principle underpinning the NLMPs in Kiribati and Tuvalu is access to employment and residence opportunities overseas that allows for ‘migration with dignity’. The Governments of both countries are well aware of the longer-term prospect of pressure from their populations for opportunities to live overseas in the face of accelerating environmental degradation exacerbated by climate change. Both Governments do not favour a strategy of resettling entire communities overseas as a last resort response to climate change. Relocation of entire communities is fraught with problems, due not only to the cultural, social, political and economic costs involved, but also because of the strong relationships that exists between most Pacific Island communities and their land (Campbell, 2010).

Figure 2: South Tarawa, capital of Kiribati



During the 1940s, communities from two islands in what was then the Gilbert and Ellice Islands Colony were resettled in Fiji, followed by the relocation of a third Gilbertese (I-Kiribati) community to the Solomon Islands beginning in the mid-1950s. These planned resettlement schemes generated considerable tensions between the traditional landowners and the relocatees, and the I-Kiribati communities relocated to Fiji and the

Solomon Islands remain “marginalised minorities in the new lands, even after several generations” (Campbell, 2010, 40; Fraenkel, 2003).

The Governments of Kiribati and Tuvalu instead favour greater access that allows for voluntary migration by members of their communities seeking opportunities for work and residence that can be accommodated within the immigration policies of other countries. They do not wish to be treated as ‘refugees’ fleeing hopeless economic and environmental situations in their home countries.⁷

The methods and assumptions about net migration that underpin our projections of population change are explored in a later section, but it is important to note at the outset that prospects for quite modest increases in current estimates of net migration having a significant impact on population growth differ markedly for the two countries. Kiribati’s estimated population in 2015 (113,400) was ten times the size of Tuvalu’s estimated 11,300 in the same year according to the SPC’s latest demographic indicators for Pacific countries (SPC, 2013).

The SPC’s 2013 demographic indicators include a net migration loss of 100 per annum for Kiribati while natural increase (the balance of births over deaths) in the population is estimated to be 2400 per annum. Net migration of 100 per annum is probably on the low side for Kiribati, given that it has some access to New Zealand’s Pacific Access Category and there has been movement of I-Kiribati into the Marshall Islands and on to the United States as well as some migration south to Fiji and to Australia.⁸ But even if net losses through international migration were double the SPC’s estimate, these would still account for less than 10 per cent of the annual gain from natural increase.

In the case of Tuvalu, the SPC estimates that natural increase is around 200 per annum with international arrivals essentially balancing out departures each year. Net losses to Tuvalu’s population through international migration each year are occurring, however, given the access Tuvalu has to the Pacific Access Category and some migration to Fiji and Australia.⁹ If these losses averaged, in total, around 100 per annum, then this net out-migration would be equivalent to 50 per cent of the annual contribution from natural increase. Such net losses have and will continue to have a major impact on the rate of population growth in Tuvalu.

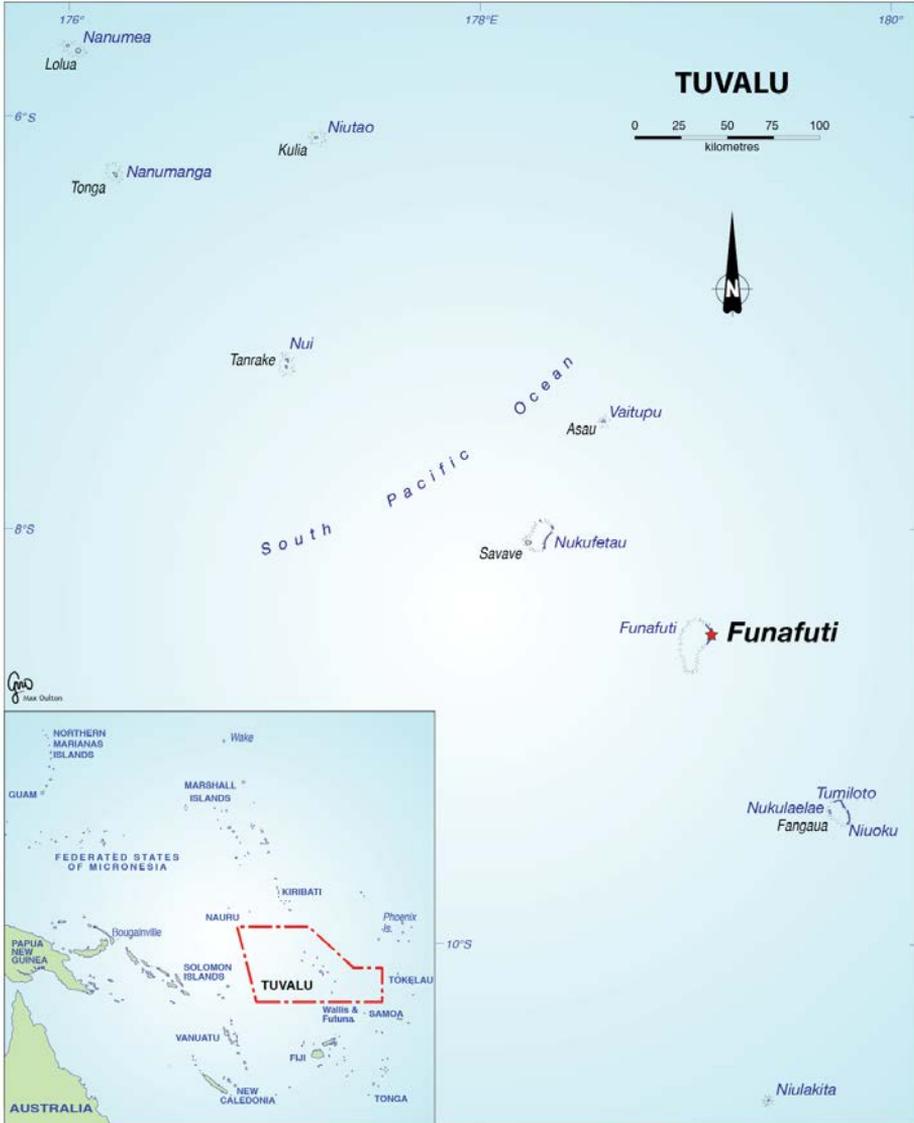
When considering future migration scenarios for Kiribati and Tuvalu, it is essential to keep the differences between the sizes of their

resident populations firmly in mind. Both countries have youthful populations (33–35 per cent under 15 years of age) and high fertility (total fertility rates are estimated to be between 3.7 and 3.9 per woman).¹⁰ Both populations have high growth potential and, according to the SPC's projections in 2013, are estimated to grow to almost twice the size they were at their last censuses by 2050.

Strategies to increase access of I-Kiribati and Tuvaluans to employment opportunities and possible long-term residence overseas must take account of the potential for the two populations to almost double within 40 years, especially if the strategies are designed to relieve pressure on already severely limited opportunities for cash-earning employment in their local labour markets. The major employer in both countries, outside of semi-subsistence village-based agriculture, is the civil service. Non-agricultural employment is heavily concentrated in the urban areas and there have long been insufficient jobs for the expanding town-based populations. Concern for the futures for young people is especially strong in both countries and this is expressed in a range of training programmes and national youth policies.¹¹

Inevitably, in the light of a combination of constraints facing the domestic economies of the two countries, ongoing rapid population growth and accelerating environmental degradation, the numbers seeking residence options overseas will increase. Governments in the region need strategies to provide greater access to overseas labour markets for I-Kiribati and Tuvaluans. The strategies should promote permanent as well as temporary movement if international migration is to make any meaningful contribution to the ongoing welfare of the populations of these two atoll island states. These strategies need to be based on realistic targets for reducing the size of the population over time in each country. This paper offers some estimates of what these targets could look like for Kiribati and Tuvalu.

Figure 3: Tuvalu, location of the urban area on Funafuti atoll



The Projection Methodology and the Base Data for the Projections

The United Nations' software package for demographic measurement in developing countries, MORTPAK, was used for the projections.¹² The Population Division of the Department of Economic and Social Affairs of the UN Secretariat (UNDESA) has been using versions of MORTPAK since 1988 for a range of demographic measurements including population projections, construction of life tables, indirect fertility and mortality estimation, and other indirect procedures for evaluating age distribution and the completeness of censuses (United Nations, 2013). In the analysis that follows, only the projection routines in the software package have been used.

MORTPAK requires the following data on which to perform projections:

- 1) the age-sex distribution of the population, by five-year age groups, through to at least age 75+ in the year the projections begin (the base population)
- 2) age-specific mortality rates and estimates of life expectancy at birth, by sex, for the year the projections begin, as well as estimates of life expectancy, by sex, for the final year of the projections. The age-specific mortality rates can be either derived from data for the country concerned, or imputed, by the program, from UN Model Life Tables
- 3) age-specific fertility rates for women, by five-year age groups, from years 15 to 49
- 4) age-specific net migration rates, by five-year age groups and sex, through to at least age 75+, and
- 5) an end date for the projections.

In the case of the projections prepared for Kiribati's and Tuvalu's populations, the five-year age distributions for the usually resident populations that are contained in their latest censuses (2010 for Kiribati, and 2012 for Tuvalu) were used as the base populations. The age-specific mortality rates and life expectancy at birth data contained in life tables for the I-Kiribati population that are available in *Kiribati 2010 census (Vol. 2): Analytical report* were used for the mortality estimates (Kiribati National Statistics Office, 2012, 30–31). In the case of Tuvalu, age-specific mortality measures based on life tables derived using indirect estimation techniques from the 2012 census results as well as other data were provided by the SPC Statistics for Development Programme (Appendix 1a).¹³

The estimates for age-specific fertility rates around 2010 (Kiribati) and 2012 (Tuvalu) were provided by the SPC Statistics for Development Programme (Appendix 1b). These produce total fertility rates (TFRs) of 3.9 children per woman in Kiribati and 3.7 children per woman in Tuvalu. These are higher estimates of fertility than were reported for Kiribati in their 2005 census, and higher than those that have been derived for Tuvalu from their vital registration and health survey data.¹⁴

The estimates for TFRs and life expectancy at birth around year 2050, which are required for the calculation of estimated populations during the projection period, were obtained from a range of sources, including SPC projections, the estimates contained in Geoffrey Hayes' report on a population policy for Tuvalu, and UNDESA's fertility and mortality estimates for Kiribati which are included in their 2015 revision of *World Population Prospects* (Files FERT/4, MORT/7-2 (males) and MORT/7-3(females)).¹⁵ The TFRs and life expectancy estimates that have been used for the beginning and end points of the projections produced for the analysis in this report are summarised in Table 2.

Table 2: Total fertility rate (TFR) and life expectancy at birth (e_0) estimates

Country and year	TFR	Life expectancy (e_0)	
		Males	Females
<i>Kiribati</i>			
2010	3.9	59.7	67.5
2050	2.7	68.6	73.8
<i>Tuvalu</i>			
2012	3.7	63.7	67.4
2050	2.3	70.1	74.4

The estimates of net migration rates by age and sex are much more speculative. In the cases of both Kiribati and Tuvalu, these have been derived in part from rates used in earlier SPC projection series that were used in a similar analysis done by the authors after the Copenhagen Climate Change Conference (Bedford & Bedford, 2010). In addition, we have used estimates derived from analysis of the age-sex distributions of net gains through permanent and long-term migration of I-Kiribati and Tuvaluans to New Zealand and Australia. We have also consulted

UNDESA's net migration estimates for Kiribati, which are contained in their 2015 *World Population Prospects* database (File MIGR/2).

The net migration rates (expressed per person in the population) are applied by the software program to specified annual net losses over the projection period (Appendix 1c). These net losses are the different migration scenarios that are discussed in the next section. In the cases of both Kiribati and Tuvalu, the migration rates are weighted towards younger adults and children in line with the preferences in immigration policies in both New Zealand and Australia for people aged between 25 and 40 years of age, and their immediate dependents.

Migration rates in the projections for older I-Kiribati and Tuvaluans are very small because both Australia and New Zealand have policies that discriminate against entry of parents and older adult siblings (Bedford & Liu, 2013). This discrimination against entry of older migrants needs to be kept in mind when considering scenarios for migration from the atoll states in the context of longer-term impacts of climate change. Pacific migrants are one of the most severely affected by the two-tier selection system for entry of parents and adult siblings via New Zealand's current family sponsorship policy, which was introduced in March 2012.

The MORTPAK software employs a cohort-component projection method whereby each five-year age group in the population is adjusted progressively over time in accordance with the fertility, mortality and migration assumptions. It is possible to extract estimates of the age-sex composition of the population (by single year of age as well as five-year age groups) at every year during the projection period, as well as estimates of births, deaths, net migration and population growth at each year.

In the analysis that follows, attention is focused on the total populations projected for years ending in 5 and 0 commencing with 2015 and finishing in year 2050. Changes in the age-sex composition of the population during the projection period are not examined in this paper; the focus is on changes in the total population and on the impact migration has on overall population growth. The next section reviews the various migration scenarios employed in the projections before discussing the impacts of these, and the fertility and mortality assumptions outlined above, on the sizes of the populations of Kiribati and Tuvalu between 2015 and 2050.

Some Migration Scenarios for Kiribati and Tuvalu, 2015–2050

An immediate as well as long-term challenge for small Pacific states is gaining access to employment opportunities overseas. Currently both Kiribati and Tuvalu have fewer people being recruited for offshore employment than they did before the Global Financial Crisis commenced in 2008. The most significant access they have to employment that might lead to permanent residence overseas is through New Zealand's small Pacific Access Category (PAC). The details of this policy will not be discussed here but it can be noted that the average net gains to New Zealand's population of 73 citizens from each of Kiribati and Tuvalu per year between July 2010 and June 2015 correspond closely to the annual quotas of 75 persons each for these two countries under the PAC.¹⁶

Seven scenarios for net migration for Tuvalu and eight for Kiribati have been prepared for the 35 years between 2015 and 2050. The first scenario for both countries is a hypothetical one with zero net migration over the projection period. This scenario generates future populations that are just affected by natural increase – the balance of births over deaths. The scenario is useful to establish what the populations of the two countries might look like if there was no immigration or emigration – in other words, they provide an assessment of growth within 'closed' populations.

The impact net migration has on population growth can be seen by comparing the estimates of total population at each year over the life of a projection with zero net migration with estimates derived from scenarios that allow for international migration. Migration makes two contributions to growth – a direct one, in terms of the actual numbers in the net gains or losses, and an indirect one in terms of the contribution that the migrants make to natural increase through births and deaths. This indirect contribution is either an addition to a country's population if it has a net migration gain or a loss through foregone natural increase if the country experiences a net migration loss.

The other scenarios all project different levels of net losses from the base year of the projections (2012 in the case of Tuvalu, and 2010 for Kiribati) through to year 2050. The various net migration scenarios are summarised for Tuvalu in Table 3 and for Kiribati in Table 4. In all cases, there are equal numbers of males and females in the net losses for each

year – a pattern that is reasonably consistent with recent observed net losses through permanent and long-term migration to New Zealand and Australia.

The constant net migration scenarios for Tuvalu reflect three types of estimates. The first is a conservative estimate of net migration around 2010 (–50 per annum). The second is a more realistic contemporary estimate (–100) which is close to the average annual net gains to New Zealand (73) and Australia (8) through permanent and long-term migration of Tuvalu citizens between 2010 and 2015 plus some losses to Fiji. The third is a high estimate (–200 per annum) which is close to the average annual net losses (220) through all types of migration from Tuvalu between 2007 and 2009 that are reported in Hayes (2011, 22).

The variable net migration scenarios all commence with net migration of –50 in 2012, rising to –100 in 2015 and then reaching progressively higher levels of net migration through to year 2050. The ‘gradual increase’ scenario allows for maximum annual net migration of –250 by 2040, which is held constant through to 2050. The ‘significant increase’ scenario allows for maximum annual net losses of 400 by 2040, while the ‘major increase’ scenario allows this maximum to increase to net losses of 500 by 2040. As will be shown in the next section, several of these scenarios result in population decline in Tuvalu by 2030, and the ‘major increase’ one essentially results in the total depopulation of Tuvalu by 2050.

Table 3: Net migration scenarios for Tuvalu, 2012–2050

Scenario	2012	2015	2020	2030	2040	2050
<i>Constant net losses</i>						
Zero (net loss 0)	0	0	0	0	0	0
Net loss –50	–50	–50	–50	–50	–50	–50
Net loss –100	–100	–100	–100	–100	–100	–100
Net loss –200	–200	–200	–200	–200	–200	–200
<i>Variable net losses</i>						
Gradual increase	–50	–100	–150	–200	–250	–250
Significant increase	–50	–100	–200	–300	–400	–400
Major increase	–50	–100	–200	–350	–500	–500

In the case of Kiribati (see Table 4), the constant migration scenario of -100 per annum equates with the SPC's estimate of net losses in 2010. The scenario of -200 per annum might be close to the average net losses through permanent and long-term migration to Australia (40) and New Zealand (73) between 2010 and 2015 plus some migration to Fiji and the United States. The -400 per annum scenario is close to the average net losses used by UNDESA in its 'medium' variant projection for Kiribati's population between 2010 and 2050.

Four variable scenarios are used in the case of Kiribati, all commencing with -100 net migration in 2010, then increasing to between -150 per annum in 2015 ('gradual increase') through to -400 per annum ('rapid increase'). The variations between the assumptions for net losses widens significantly by the time they become constant again in 2040, ranging from -400 per annum for the 'gradual increase' scenario' to -5000 per annum for the 'rapid increase' scenario.

Table 4: Net migration scenarios for Kiribati, 2010–2050

Scenario	2010	2015	2020	2030	2040	2050
<i>Constant net losses</i>						
Zero (net loss 0)	0	0	0	0	0	0
Net loss -100	-100	-100	-100	-100	-100	-100
Net loss -200	-200	-200	-200	-200	-200	-200
Net loss -400	-400	-400	-400	-400	-400	-400
<i>Variable net losses</i>						
Gradual increase	-100	-150	-200	-300	-400	-400
Significant increase	-100	-200	-400	-800	-1600	-1600
Major increase	-100	-300	-600	-1200	-2400	-2400
Rapid increase	-100	-400	-1000	-3000	-5000	-5000

As is shown in the next section, it is not until one gets net losses of the kind reported in the 'rapid increase' scenario that population growth in Kiribati stabilises and begins to decline in the 2030s. The momentum effect of population growth that is sustained by high but slowly declining fertility and declining mortality, keeps the population increasing right through the projection period in all of the other scenarios.

Population Growth and Net Migration in Tuvalu, 2015–2050

Estimates for population growth between 2015 and 2050 in Tuvalu by the SPC Statistics Development Program and the Population Division of UNDESA are quite divergent (Table 5). While we do not have the specific fertility, mortality and migration assumptions for the SPC and UNDESA projections for Tuvalu, it seems clear that the SPC has assumed that the present high age-specific fertility rates will continue and there will be negligible net migration losses to the population.

The UN ‘high’ variant generates about half the growth of the SPC’s projection (an additional 4650 people by year 2050 compared with 8300 for the SPC’s projection). It should be noted that the UNDESA’s estimated population for 2012 (9900), the base year for the projections, is smaller than the census population for Tuvalu in 2012 that was used in the SPC projections (10,640).¹⁷

None of the projected populations for Tuvalu generated using the various migration scenarios contained in Table 3 produce such high estimates over the 35 years as those contained in the SPC’s most recent published projections. The ‘zero’ net migration scenario produces a projected population of 17,810 by 2050, compared with the SPC’s projected population of 19,600. The difference between the two is due, in large measure, to the fact that the projections we have generated for Tuvalu allow for a greater decline in fertility in Tuvalu than the SPC’s projections. The ‘–50’ constant net migration scenario produces a population for year 2050 (15,160) which is around 500 larger than the UNDESA’s ‘high’ projection variant (14,670).

Table 5: Projected populations, Tuvalu, 2015–2050

Scenario	2015	2020	2030	2040	2050	Growth, 2015–50
SPC 2013	11,300	12,300	14,400	16,900	19,600	8,300
UN 'high'	10,020	10,390	11,600	12,700	14,670	4,650
<i>Constant net losses</i>						
Zero (net loss 0)	11,160	12,100	14,040	15,930	17,810	6,650
Net loss –50	11,000	11,660	12,940	14,090	15,160	4,160
Net loss –100	10,850	11,220	11,840	12,240	12,500	1,650
Net loss –200	10,540	10,340	9,650	8,560	7,200	–3,340
<i>Variable net losses</i>						
Gradual increase	10,950	11,230	11,060	8960	8,220	–2,730
Significant increase	10,950	11,130	10,130	7,510	3,750	–7,200
Major increase	10,950	11,130	9,890	6,430	1,400	–9,550

When annual net migration is held constant, Tuvalu's population in 2050 ranges from 15,160 (-50 per annum) to 7200 (-200 per annum). Net migration of -50 and -100 people per annum for the next 35 years will still see a larger population living in the islands than was the case in 2015; these are the net losses that accommodate New Zealand's current PAC quota for Tuvalu and some small outflows to Australia, Fiji and the United States. Continuation of these levels of net migration, on the basis of the assumptions used in our projections, will not lead to a smaller population in 2050 than the country had in 2015.

If net migration levels of -200 a year, were to persist over the next 35 years, Tuvalu's population could be 31 per cent smaller in 2050 than it was in 2015. Consistent net losses at this level would more than compensate for natural increase (the balance of births over deaths) throughout the projection period. The variable net migration assumptions ('gradual', 'significant' and 'major') all produce populations for Tuvalu in 2050 that are smaller than that estimated for 2015. Because they have similar levels of assumed net migration losses through to 2020, all three scenarios produce growth in Tuvalu's population into the 2020s. However, by 2030 the three scenarios are producing progressively smaller populations for the country at each year.

The impact that the various migration scenarios shown in Table 3 have on Tuvalu's population growth over the 35-year projection period is larger than the sum of the actual net losses each year. In addition to the numbers of people lost directly to the population through net migration, there is also an indirect loss of these people's potential to contribute to population growth in Tuvalu. This is especially important for the contribution that natural increase makes to growth in the source country's population.

The various scenarios for net migration in Tuvalu assume equal numbers of males and females in the aggregate net losses, which is consistent with the sorts of migration flows associated with residence quotas like the PAC. Estimates of the direct and indirect losses of population to Tuvalu through migration under the different scenarios are shown in Table 6. The overall effect of migration on population growth is obtained by subtracting the population for 2050 produced by the different net loss scenarios from the estimated 'zero' net migration scenario (Table 5). The constant net migration scenarios have the same net losses for each

of the 35 years, whereas the variable net losses have increasing net losses with progressively larger annual increments between the levels defined for specific years.

In the case of the constant net migration scenarios, 66 per cent of the total losses to Tuvalu's population due to migration over the 35 years can be accounted for by the assumed balance of arrivals over departures in each of the scenarios (–50, –100 or –200 per annum). The remaining third is the estimated contribution to natural increase that the migrants might have made to Tuvalu's population if they hadn't left and there had been zero net migration (Table 6). This share of foregone natural increase is the same for each of the constant scenarios (other than the zero net migration one which has no foregone natural increase) because the net losses have the same age-sex profile every year and are of a consistent magnitude throughout the projection period.

The proportions of the total losses to Tuvalu's hypothetical 'zero net migration' population in year 2050 that are accounted for directly by migration over the 35 years are higher in the cases of the variable scenarios (Table 6). This is because these scenarios have progressively larger net losses after 2020. Migration has an increasing impact on Tuvalu's population over time (see Table 3) rather than a consistent one, which is the case for the other scenarios.

Table 6: Direct and indirect components of the net migration losses for Tuvalu, 2015–2050

Scenario	Population at 2050	Total impact of net losses	Direct losses	Indirect losses	% losses direct
<i>Constant net losses</i>					
Zero (net loss 0)	17,810	0	0	0	0
Net loss –50	15,160	2,650	1,750	900	66.0
Net loss –100	12,500	5,310	3,500	1,810	66.0
Net loss –200	7,200	10,610	7,000	3,610	66.0
<i>Variable net losses</i>					
Gradual increase	8,220	9,590	7,050	2,540	73.5
Significant increase	3,750	14,060	10,600	3,460	75.4
Major increase	1,400	16,410	12,550	3,860	76.5

Relatively small net migration losses of 100 to 200 per annum would have a significant impact on population growth. This is despite Tuvalu's high fertility, and the associated significant momentum effect for population growth over the next three decades which could add the equivalent of between 6600 ('zero' net migration scenario) and 8300 people (SPC's 2013 projection) to the estimated population in 2050. These sorts of numbers could be readily accommodated by small increments to New Zealand's PAC quota each year, especially if there was some relaxation of current criteria governing principal applicants' ages and expected incomes.

The 'gradual increase' scenario, which allows annual net migration to increase from -100 in 2015 to -250 in 2040, would leave a population of just over 8200 in the country by 2050 – the equivalent of Tuvalu's population in the late 1990s. Maintenance of this level of net migration would see the population continue to decrease. This is a migration scenario that does not require sudden increases in net migration losses to the country's population, or radical changes in policy in another country to accommodate higher levels of Tuvaluan immigration.

By making minor amendments to its immigration policy settings over time, New Zealand could easily absorb gradually increasing levels of voluntary migration from Tuvalu, with some appropriate assistance with finding jobs and suitable accommodation for migrants. This could well be the most cost-effective way by which New Zealand could make a contribution to meeting the anticipated demand for greater access to residence overseas by Tuvaluans in the face of the environmental degradation associated with ongoing urbanisation and accelerating climate change. This contribution will be facilitated by the fact that New Zealand already has a resident Tuvaluan population in excess of 3000 people – a legacy of earlier labour migration schemes and the comparatively high rate of natural increase amongst this population.

Population growth and net migration in Kiribati, 2015–2050

Estimates of population growth in Kiribati between 2015 and 2050 that have been made by the SPC and UNDESA ('high' variant) do not vary as much as those noted earlier for Tuvalu (Table 7). Both series allow for continuing (but declining) high fertility and annual net migration losses. The SPC's 2013 projected population for Kiribati in 2050 (208,000) is

11,000 higher than the UNDESA's 2015 'high' estimate of 197,000 for that year (Table 7). As in the case of Tuvalu, the UNDESA's population for 2010 (100,000) is smaller than the census population for Kiribati in 2010 (103,000) on which the SPC's projections are based.

The SPC and the UNDESA projections, which factor in net migration losses of between -100 and -400 per annum, produce growth by between 85,000 and 95,000 during the period between 2015 and 2050 (Table 7). The hypothetical zero net migration scenario, which we have generated using 2010 census estimates for fertility and mortality, produces a population of 214,500 in 2050 – just under 100,000 larger than the 2015 estimate of 115,500 for this projection (Table 7). These are very big population increases and clearly it is going to take substantial net migration losses to stabilise and then begin to reduce the size of Kiribati's population.

The three scenarios with constant net migration losses that are in the range of contemporary estimates for out-migration make a relatively small dent in overall population growth between 2015 and 2050 (Table 7). Annual net migration at these levels (-100, -200 and -400) is not going to have much impact on population growth in Kiribati, although a constant net loss of -400 per annum will remove around 23 per cent of the growth that might occur if there is no net migration during the 35 years.¹⁸

The variable net loss scenarios allow for some markedly larger net losses, especially for the 'significant', 'major' and 'rapid increase' variants. The 'gradual increase' scenario, which allows for net migration losses of between 150 and 400 per annum on an increasing scale (Table 4), generates a population in 2050 that is virtually the same as the UN 'high' variant population for Kiribati in that year (Table 7). The 'significant', 'major' and 'rapid increase' net migration scenarios allow for annual losses to reach 1200, 2400 and 5000, respectively. These are well beyond any previous migration losses and achieving them will require much more access to opportunities for work and residence overseas.

Table 7: Projected populations for Kiribati, 2015–2050

Scenario	2015	2020	2030	2040	2050	Growth 2015–50
SPC 2013	113,400	125,800	149,800	177,100	208,000	94,600
UN 'high'	112,000	124,000	147,000	170,000	197,000	85,000
<i>Constant net losses</i>						
Zero (net loss 0)	115,500	128,900	156,000	184,500	214,500	99,000
Net loss –100	114,900	127,700	153,300	180,000	208,200	93,300
Net loss –200	114,400	126,400	150,500	175,600	201,900	87,500
Net loss –400	113,300	124,000	144,900	166,700	189,300	76,000
<i>Variable net losses</i>						
Gradual increase	114,900	127,200	150,800	174,200	197,800	82,900
Significant increase	114,800	126,400	145,900	158,500	164,900	50,100
Major increase	114,600	125,400	141,000	145,800	140,400	25,800
Rapid increase	114,300	123,900	127,000	102,500	58,500	–55,800

Table 8: Direct and indirect components of the net migration losses for Kiribati, 2015–2050

Scenario	Population at 2050	Total impact of net losses	Direct losses	Indirect losses	% losses direct
<i>Constant net losses</i>					
Zero (net loss 0)	214,500	0	0	0	0
Net loss –100	208,200	6,300	3,500	2,800	55.6
Net loss –200	201,900	12,600	7,000	5,600	55.6
Net loss –400	189,300	25,200	14,000	11,200	55.6
<i>Variable net losses</i>					
Gradual increase	197,800	16,700	10,750	5,950	64.4
Significant increase	164,900	49,600	34,800	14,800	70.2
Major increase	140,400	74,100	52,200	21,900	70.4
Rapid increase	58,500	156,000	111,200	44,800	71.3

It is only when we get net losses of the magnitude used in the ‘major’ and ‘rapid increase’ scenarios that population growth begins to slow significantly by 2030 and, in the case of the ‘rapid increase’ scenario, the population begins to decline during the 2030s. In the ‘rapid increase’ scenario, net losses of 1200 per annum or more begin as early as 2020, reaching 2400 per annum by 2030 and 5000 per annum by 2040. This sort of net migration schedule brings the population of Kiribati back to its 2010 level (103,000) by 2040, and reduces it to 58,500 by 2050 – the population that Kiribati had around the time of independence in the late 1970s.

The direct and indirect impacts that the net migration losses had on the hypothetical population growth for Kiribati under the zero net migration scenario are summarised in Table 8. The direct contributions made by the small annual net losses in the three constant migration scenarios account for just over half (55 per cent) of the total growth that is foregone as a result of out-migration. The other 45 per cent is the indirect loss caused by removal of adults in their primary reproductive age groups – the contributions to population growth they made under the zero net migration scenario and which moved offshore with them when they migrated.

As was the case with Tuvalu, the variable migration scenarios all have higher proportions of their overall impact on population growth accounted for by direct losses of people. This is especially the case for the three scenarios that have net losses in excess of 1000 per annum from 2030. The ‘rapid increase’ scenario, which has losses in excess of 1000 per annum from 2020, would remove the equivalent of the total resident population of Kiribati in 2015 through direct net migration losses (111,200).

Admittedly, the ‘rapid increase’ scenario is an extreme one, but it does need to be kept in mind that an annual country quota of at least 1000 for permanent residence of Pacific people in New Zealand has a long-established precedent. There has been an annual quota of 1100 places for permanent residence of Samoans in New Zealand for more than 40 years. At the time Samoa gained independence in 1962, and when the Samoan Quota was included as a component of the Treaty of Friendship with New Zealand, Samoa’s population (113,000) was around the size of the current population of Kiribati.

Some Policy Implications

It will be clear from this examination of projected population change in Kiribati and Tuvalu that these two atoll states, with their high rates of natural increase and limited access to residence and employment overseas, face some major challenges when it comes to providing rewarding rural and urban livelihoods for their future residents. Both countries have around 50 per cent of their residents living in their main urban area – South Tarawa in Kiribati, and Funafuti in Tuvalu. Urban and rural livelihoods are being increasingly affected by environmental changes linked with global warming: acidification of the oceans and damage to coral reefs and fisheries, coastal erosion linked with ‘king’ tides and slowly rising sea levels, damage to fresh water lenses with saltwater intrusion following storm surges, and more severe droughts and water shortages.

In 2015, the populations of Kiribati and Tuvalu were double the size they were when the two countries became independent just over 35 years earlier in the late 1970s. They face the prospect of almost doubling again over the next 35 years according to the SPC’s projections. Any discussion of labour migration as a potential contributor to development in these atoll states must be situated in a sound appreciation of the realities of their evolving populations dependent on micro, slow-growth economies in environments that will be progressively degraded by climate change.

There is no doubt that neighbouring states will need to play an increasing role in the futures for I-Kiribati and Tuvaluans. The recently adopted National Labour Migration Policies of both countries acknowledge the need for greater access to employment and residence opportunities overseas. In both countries, there has long been recognition that climate change poses major threats for the long-term security of their populations and economies. And in both countries, there is a strong preference for opportunities to migrate with dignity in the face of declining prospects for deriving sustainable rural and urban livelihoods on atolls.

The Government of Fiji has acknowledged officially that such assistance will be required and provided where this is possible. It is also widely accepted, albeit unofficially, in New Zealand especially and to a lesser extent in Australia, that there is an obligation to provide assistance for the inhabitants of central Pacific atolls and raised coral islands that provided their farming industries with high-quality phosphate for most of

the 20th century. The challenge is to persuade governments in 2016 that it is vital to set in place the policies that will allow increasing numbers of I-Kiribati and Tuvaluans to migrate with dignity at the time they choose to move and to the destinations they wish to seek work and residence in. Setting realistic targets for entry of I-Kiribati and Tuvaluans, and providing support for new migrants as they seek suitable work and accommodation, should be at the centre of these policies.

Quota-based programmes, along the lines of the PAC and the Samoan Quota, definitely have a place in the policy package that might be developed to address the inevitable increase in pressure from I-Kiribati and Tuvaluans for greater access to work and residence overseas. This paper has given an indication of the scale of net migration losses that will be required to stabilise population growth in Kiribati and Tuvalu and, if circumstances require it, to allow for a progressive depopulation of these island states as a response to lack of economic sustainability and environmental change.

It is clear from the analysis that the two states have quite different prospects in this regard. Tuvalu's population change and prospective depopulation, if this becomes necessary, will be easy to accommodate via the PAC if New Zealand allows for small increases in numbers able to access work and residence via this type of visa. Kiribati, on the other hand, poses challenges of quite a different magnitude for several reasons, including its larger resident population base, its more rapid population growth, its severely degraded urban environment, and its much smaller overseas diaspora in relation to its total resident population.

Australia and New Zealand allow hundreds of thousands of people from other countries to enter for temporary skilled and unskilled work and to explore possibilities for transitioning to residence while in the country. The net migration levels suggested in the different scenarios in this paper are very small by comparison with the numbers admitted for work and residence in Australia and New Zealand each year. It should be possible for proactive policy packages to be developed that allow increasing numbers of I-Kiribati and Tuvaluans to exercise choice about when they might seek work and residence overseas and to migrate with dignity without undermining the viability of societies and economies at their destinations.

Notes

- 1 There is an extensive literature on the impact of climate change on atoll environments in the central Pacific, much of which is reviewed in Barnett and Campbell (2010). See also, amongst many other studies, Campbell (2014); Campbell and Bedford (2012); Connell (2013); Denner (2012); Farbotko and Lazrus (2012); McLean and Kench (2015); Stratford, Farbotko, and Lazrus (2013); Webb and Kench (2010); and World Bank (2012).
- 2 Small numbers of I-Kiribati and Tuvaluans currently have limited privileged access to residence in New Zealand via the Pacific Access Category (75 people a year subject to several conditions relating to employment, age, health and good character). Fiji also has a special relationship with Kiribati and Tuvalu that dates back to the colonial era when there was some resettlement of people from specific islands in the GEIC in Fiji. For a range of reasons, including this legacy of colonialism, the Government of Fiji recognises that this relationship could extend to allowing increased residential migration in the future. However, this is not an 'open access' arrangement like the ones that Marshallese and Tokelauans have with the United States and New Zealand, respectively.
- 3 See Bedford and Bedford (2010) for a review of population change and urbanisation in Kiribati and Tuvalu since the 1940s.
- 4 For useful reviews of the policy of migration with dignity, see McLellan (2012) and McNamara and Gibson (2009).
- 5 There is an extensive literature on labour migration from Kiribati and Tuvalu. Recent summaries can be found in Bedford, Burson, and Bedford (2014). For a more detailed discussion of historical and contemporary overseas migration in Kiribati and Tuvalu, see also Bedford and Bedford (2010).
- 6 The Kiribati National Labour Migration Policy and the Tuvalu National Labour Migration Policy have been approved by the respective governments and are in the process of being released for public circulation by the ILO Office for Pacific Countries.
- 7 See, for example, Farbotko (2010); Farbotko and Lazrus (2012); Shen and Gemenne (2011); and Smith (2013).
- 8 Arrival and departure statistics collected in New Zealand show that during the five years between July 2010 and June 2015 there was a net migration gain to New Zealand of 367 citizens of Kiribati – an average of just over 73 per annum. In the case of Australia, the net gain through permanent and

long-term migration over the same five years was 193 Kiribati citizens – an average of just under 40 per annum. These estimates come from unpublished arrival and departure data provided by Statistics New Zealand and, for Australia, by Margaret Young at the University of Adelaide. The United Nations Department of Economic and Social Affairs (UNDESA) estimates that there were around 1800 people born in Kiribati living in the United States in 2013, the largest Kiribati-born population in any overseas country in their International Migrant Stock statistics (POP/DB/MIG/STOCK/REV 2013).

<http://esa.un.org/unmigration/migrantstocks2013.htm?msdo>

- 9 Using the same arrival and departure data that was used to estimate net migration losses for Kiribati citizens, it is apparent that there has been a slightly larger net loss of Tuvalu citizens to New Zealand between July 2010 and June 2015 (378, or an average of just over 73 persons per annum) and a much smaller net loss to Australia (41, or an average of 8 per annum). Data on international migration between Tuvalu and Fiji are not readily available but, given that Fiji is an important destination for Tuvaluans, as well as I-Kiribati, seeking tertiary education, medical treatment and consumer goods, it is likely there are net migration losses from both countries to Fiji. The Tuvalu-born population in the United States is small, around 140 according to UNDESA's 2013 Migrant Stocks analysis (referred to in the preceding endnote).
- 10 These estimates of fertility come from the SPC Statistics for Development Programme. They are referenced more fully in the notes below.
- 11 There have been many reports written about the challenges of growing non-agricultural job opportunities in Kiribati and Tuvalu. Limited domestic wage-earning employment opportunities are frequently referred to in reports prepared by the International Monetary Fund (IMF) and the Asian Development Bank (ADB) on these two countries (see, for example, IMF (2012, 2014). With regard to the challenges facing young people, see, for example, Curtain (2011), Government of Kiribati (2011) and Government of Tuvalu (2011).
- 12 It was necessary to prepare a new set of population projections so that a range of net migration scenarios could be used. The SPC and UNDESA projections that were available to us did not allow for this experimentation.
- 13 We acknowledge the assistance of Arthur Jorari, Population Specialist, SPC Statistics for Development Programme, who provided the estimates of mortality and fertility based on the latest censuses held in Kiribati and Tuvalu.

- 14 Fertility measures and trends in Kiribati are discussed in Kiribati National Statistics Office (2012, 20–25). Hayes (2011, 25–30) reviews fertility estimates in Tuvalu.
- 15 The UNDESA projections and associated estimates for fertility, mortality and net migration gains and losses can all be found at <https://esa.un.org/unpd/wpp/Download/Standard/Population/>
- 16 The operation of the PAC and outcomes for migrants selected under this policy are discussed in Curtain (forthcoming) and Merwood (2013).
- 17 The population projections for small Pacific states generated by the Population Division of UNDESA have consistently been more conservative than those generated by the SPC's Statistics for Development Programme.
- 18 The population in 2050 for the constant net migration (–400) scenario is larger by 76,000 than the population in 2015. The zero net migration scenario produces a population in 2050 that is 99,000 larger than the population in 2015. The difference (23,000) is equivalent to 23 per cent of the population growth generated by the zero net migration scenario.

Appendices: Fertility, mortality and migration rates used in projections

Appendix 1a: Age-specific mortality rates (q_x) from life tables

Age group	Kiribati 2010		Tuvalu 2012	
	Male	Female	Male	Female
0-1	0.0500	0.0390	0.0356	0.0310
1-5	0.0161	0.0109	0.0079	0.0081
5-10	0.0064	0.0033	0.0078	0.0065
10-15	0.0057	0.0026	0.0065	0.0049
15-20	0.0091	0.0050	0.0104	0.0079
20-25	0.0132	0.0070	0.0148	0.0106
25-30	0.0154	0.0094	0.0168	0.0124
30-35	0.0186	0.0115	0.0174	0.0145
35-40	0.0255	0.0156	0.0217	0.0176
40-45	0.0377	0.0217	0.0292	0.0220
45-50	0.0551	0.0318	0.0409	0.0297
50-55	0.0858	0.0473	0.0595	0.0421
55-60	0.1217	0.0705	0.0877	0.0605
60-65	0.1865	0.1043	0.1299	0.0926
65-70	0.2632	0.1546	0.1904	0.1440
70-75	0.3545	0.2234	0.2796	0.2277
75-80	0.4544	0.3119	0.4030	0.4380
80-85	0.5642	0.4467	0.5551	0.6068
Derived e_0	59.71	67.49	63.69	66.82

Appendix 1b: Age-specific fertility rates

Age group	Kiribati		Tuvalu	
	2010	2050	2012	2050
15–20	0.049	0.030	0.018	0.010
20–25	0.182	0.130	0.199	0.100
25–30	0.206	0.160	0.224	0.150
30–35	0.177	0.120	0.148	0.120
35–40	0.118	0.090	0.108	0.060
40–45	0.040	0.020	0.050	0.020
45–50	0.005	0.001	0.001	0.001
Derived TFR	3.89	2.76	3.74	2.30

Appendix 1c: Age-specific net migration rates

Age group	Kiribati		Tuvalu	
	Male	Female	Male	Female
0– 5	0.062	0.062	0.117	0.106
5–10	0.027	0.027	0.120	0.089
10–15	0.021	0.022	0.107	0.114
15–20	0.107	0.116	0.140	0.130
20–25	0.189	0.201	0.084	0.065
25–30	0.181	0.187	0.068	0.041
30–35	0.137	0.136	0.100	0.154
35–40	0.095	0.091	0.076	0.098
40–45	0.064	0.059	0.085	0.106
45–50	0.043	0.038	0.029	0.033
50–55	0.028	0.024	0.019	0.027
55–60	0.018	0.015	0.015	0.012
60–65	0.012	0.010	0.010	0.010
65–70	0.008	0.006	0.010	0.007
70–75	0.005	0.004	0.010	0.004
75+	0.003	0.002	0.010	0.004
All ages	1.000	1.000	1.000	1.000

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First-Time Mothers of Advanced Age in New Zealand

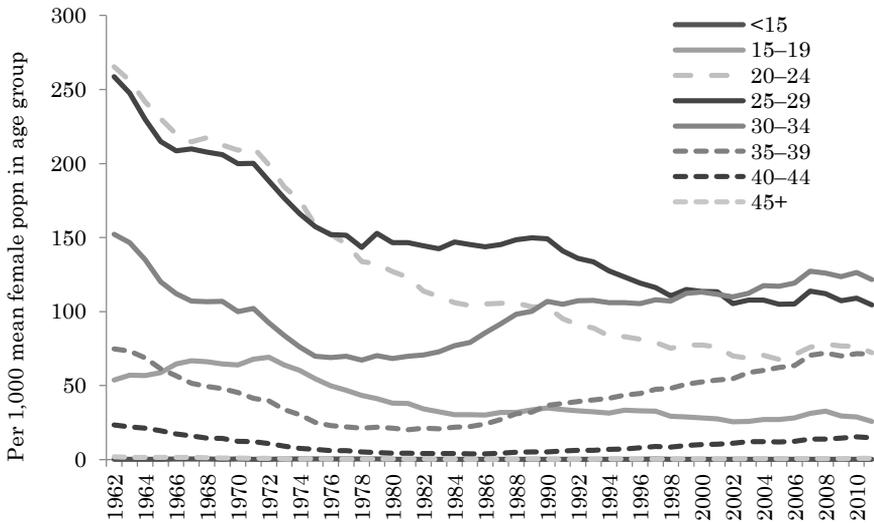
BRYNDL HOHMANN-MARRIOTT ¹

Abstract

In New Zealand, as in most developed countries, age at first-time parenthood is rising. This postponement of parenthood has major consequences for the population as well as for individuals, but it has not yet been described in New Zealand. This analysis describes the characteristics of first-time New Zealand mothers of advanced maternal age. Data are from the Growing Up in New Zealand study, which follows a cohort born in 2009/10. Data include 2850 first-time expectant mothers, and those aged 35–37 years and 38 years or older are compared with those aged 25–34 years on a number of socio-demographic measures. This comparison reveals that advanced-age mothers, particularly mothers aged 38 years or older, have higher use of ART and fewer unplanned pregnancies. Mothers aged 35 years or older are more likely than mothers aged 25–34 to have unmarried partners, and mothers aged 38 years or older are more likely to be single. First-time mothers with an advanced degree are also more likely to be of advanced age (38 years or older).

Age at parenthood is rising in most developed countries. In New Zealand, for the first time, births to women aged 35–39 years have surpassed births to women aged 20–24 years (Statistics New Zealand, 2014; see Figure 1). The timing of these births is important from a life-course perspective, as well as having individual, interpersonal and societal consequences. It is thus essential to understand who is delaying their first birth. Despite its importance, no study has yet described mothers in New Zealand who are having their first births at an advanced maternal age. To offer a first look at these processes, I describe the socio-demographic characteristics of first-time mothers by age and examine the characteristics that distinguish first-time mothers of advanced age (35–37 years) or very advanced age (38+ years) from a comparison group of women aged 25–34 years.

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Figure 1: Age-specific fertility rates 1962-2011 for New Zealand

Source: Statistics New Zealand data from MacPherson (2014); author figure.

Background

Postponing parenthood has become increasingly acceptable and possible. The availability of reliable contraceptives offers the ability to defer parenthood indefinitely or at least until a specific set of conditions have been reached (Balbo, Billari, & Mills, 2013; Mills et al., 2011). Postponement is also encouraged by the misconception that assisted reproductive technologies can solve any difficulties that may arise (Cooke, Mills, & Lavender, 2013).

Some aspects of postponing childbearing are favourable. Parents who have postponed having children so that they can complete their education and establish a career have greater financial and material assets. They are thus better situated to provide educational and other opportunities for their children (Cooke et al., 2012; Mills et al., 2011). Wanting to find the right partner is frequently offered by parents as the reason they delayed childbearing (Hammarberg & Clarke, 2005). Those who are older and more established when they find a partner with whom to have children tend to form stable relationships, which translates to a lower chance of experiencing family breakdown (Cooke et al., 2012; Mills et al., 2011; Schmidt et al., 2012).

Waiting to accrue these advantages is a gamble, however. Women who postpone parenthood risk reduced fecundity as they age. By older ages, men and women have also had more time to contract or develop health conditions affecting their fecundity. Lifestyle elements such as nutrition, exercise, alcohol intake and smoking contribute to obesity and other related health problems, which can also lower fecundity (Mintziori et al., 2013). The inverse relationship between fecundity and age means that, by their mid- to late thirties, many people must seek assistance to achieve their reproductive goals. However, assisted reproductive technologies (ART) cannot completely offset age-related fecundity since the success of ART is itself age dependent (Mills et al., 2011; Mintziori et al., 2013). Furthermore, those who wish for more than one child encounter a compressed time frame in which to realise their desired number of children (Kippen, 2006; Mills et al., 2011; Schmidt et al., 2012).

For society, there are demographic consequences of postponing parenthood, such as fertility decline (Kippen, 2006). Other societal consequences of postponement include a decrease in the proportion of the population able to complete their fertility goals, and an increase in permanent and unintended childlessness (Kippen 2006; Schmidt et al., 2012). In addition, there are health-related consequences for society in terms of increased adverse outcomes for children born to older parents (Mintziori et al., 2013; Schmidt et al., 2012).

New Zealand's total fertility rate (TFR) has been relatively steady at 2.0. It is similar to that of the United States but substantially higher than in most European countries. Overall, gender equality in New Zealand is relatively high by world standards (World Economic Forum, 2014). Although the policy regime is neo-liberal, there do exist national schemes aimed at offsetting the financial burden of children and allowing women to combine employment and childrearing, such as paid parental leave and twenty free hours of early childhood education for children (Families Commission, 2014).

New Zealanders place a high social value on parenthood. This is particularly evident amongst Māori and Pacific Island communities and has been incorporated into the values of the Pākehā (non-Māori) population. New Zealand is considered a safe place to raise children, with a widespread belief that children have the right to a childhood characterised by fresh air, wide open spaces, and physical activity in the great outdoors.

Method

Data and sample

My analysis uses the cohort study Growing Up in New Zealand (Morton et al., 2012). This innovative and interdisciplinary study conducted its first wave of interviews during the final trimester of pregnancy. Participants were women due to give birth between 25 April 2009 and 25 March 2010 and resident in the larger Auckland region, a diverse area with 29 per cent of the country's population and one-third of its births (Morton et al., 2012).

Of the 6822 women who participated in the Growing Up in New Zealand antenatal survey, 2850 were first-time mothers (defined as not having had a prior pregnancy that continued past 24 weeks), with ages ranging from 15 to over 40 years. This analysis follows other studies that describe the characteristics of advanced-age mothers by comparing mothers of advanced age with a comparison group of mothers in a mid-range age (e.g. Guedes & Canavarro, 2014; Nilson et al., 2012). It follows Nilson et al. (2012) in further dividing the advanced-age mothers into advanced (35–37 years) and very advanced (38+ years). The sample for the comparative analysis comprised 2032 women, including 1593 (78%) in a comparison group aged 25–34, 265 (13%) mothers of advanced age of 35–37 years, and 174 (9%) mothers of very advanced age of 38 years or above.

Measures

Unplanned pregnancies were assessed by asking the mothers: “Was this pregnancy planned?” Those responding that the pregnancy was planned were asked how long they had tried before becoming pregnant. Responses were coded into months ranging from 1 month to 60 months. Those with planned pregnancies were further asked: “Did you have any treatment to assist you with becoming pregnant?”

Health was measured by the question: “Thinking about before you became pregnant, in general would you say your health was...” Response choices were “poor or fair”, “good”, “very good” or “excellent”. The variable was coded: 0 = poor/fair/good, or 1 = very good/excellent.

Education was coded: 0 = no formal qualification; 1 = secondary school (National Certificate in Educational Achievement (NCEA) levels 1–4); 2 = diploma below bachelor's degree level, trade certificate or NCEA

levels 5 or 6; 3 = bachelor's degree; or 4 = bachelor's degree with honours, master's degree, or PhD.

Employment status was either employed or not employed (which includes unemployed, student or not in the labour force). Income was measured by the question: "In the last 12 months, what was your total income, before tax or anything else was taken out of it? Please include your personal income in this total." Responses (in NZ\$) were coded: 1 = <\$30,000; 2 = \$30,001–\$50,000; 3 = \$50,001–\$70,000; 4 = \$70,001–\$100,000; or 5 = \$100,001 or more.

Partnership status was coded: 1 = no partner or dating; 2 = living together unmarried; or 3 = married or civil union (only four women were in a civil union).

Ethnicity was based on a question asking women to specify the "main" ethnic group with which they identified. These responses were used to code pan-ethnic categories: 1 = New Zealand European; 2 = Māori; 3 = Pacific Islander (including Samoan, Cook Islands Māori, Tongan, Niuean, Tokelauan, Fijian, Fijian Indian, and other Pacific peoples); 4 = Asian (including Indian, Sri Lankan, Chinese, Korean, Japanese, Filipino, Cambodian, Vietnamese, and Other Asian); or 5 = Other (including Australian, European, Middle Eastern, Latin American, and African).

Analysis

I begin by describing characteristics of first-time New Zealand mothers of all ages in Figures 2–4. For each of these characteristics, I compare mothers aged 35–37 years and those aged 38+ with a comparison group of mothers aged 25–34 years. I use chi-squared and ANOVA tests for the comparisons, which are detailed in Table 1. I then examine all factors together using multinomial logistic regressions predicting first-time maternal age at pregnancy (see Table 2). To include all comparisons, the regression was run once with mothers aged 25–34 years as the comparison group (the first two models), then again using mothers aged 35–37 years as the comparison group (the third model). The pseudo- R^2 is 0.1, indicating that the model with predictor variables is a somewhat better fit than the null model.

Results

The first set of characteristics focuses on conception and mothers' health. The number of unplanned pregnancies decreases steeply with age, as seen in Figure 2, contrasting with the increase in the time to pregnancy and use of ART. Unexpectedly, reported good health also increases with age. Comparisons in Table 1 reveal that the pregnancy was planned by a higher proportion of mothers aged 35+ than the comparison mothers. All advanced-age mothers reported better health than the comparison mothers; this could reflect that only mothers with good health were able or willing to be pregnant at this age, or perhaps that these mothers may have been consciously trying to improve or support their health with the goal of becoming pregnant and maintaining a healthy pregnancy. In several aspects, the 38+ mothers were distinguishable from mothers aged 35–37 years, as well as from mothers younger than 35 years. Of mothers with planned pregnancies, the very advanced-age mothers had taken the longest to become pregnant; this is to be expected as fecundity declines with age. In addition, more than one-third of the aged 38+ group had used some form of assisted reproductive technology (ART), double the proportion in the 35–37 years group who used ART and well above the 7 per cent of the comparison group.

Family structure also differs markedly by age (Figure 3). Although more than half of the mothers in the three age groups were married, the 25–34 group had the highest proportion married. For mothers 35 years or older, a substantial number were living together in non-marital partnerships. Although the proportion of mothers with no partner or no co-resident partner was small across all age groups, twice as many mothers aged 38+ years had no partner compared with the unpartnered numbers in the other two groups. For unpartnered mothers, most pregnancies were unplanned and only two unpartnered mothers had used ART.

Figure 4 shows that education and income rise steeply with age, but fall for the oldest first-time mothers. A significantly greater share of mothers aged 35–37 years and 38+ years had an honours or postgraduate degree compared with mothers aged 25–34 years. Mothers aged 35–37 years also had the largest share in the top income bracket.

Table 1: Age group comparisons of first-time mother characteristics

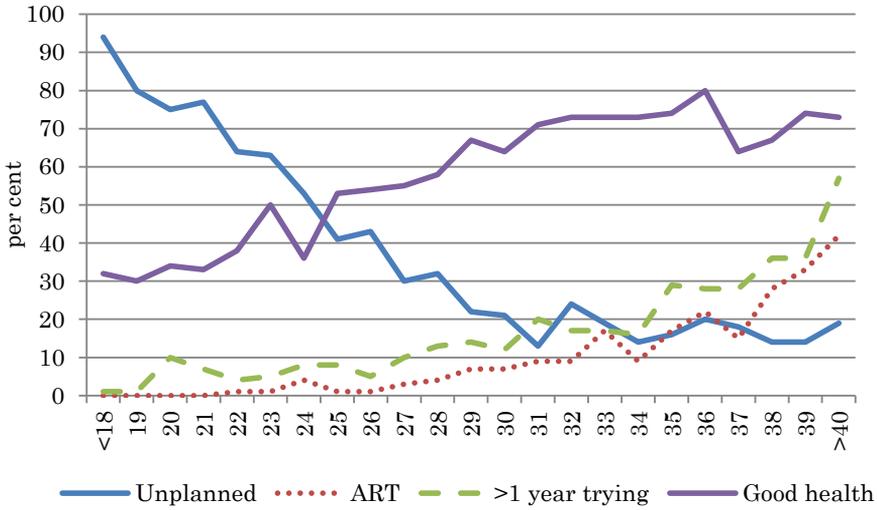
	25–34	35–37	38+	N = (Total sample)
Pregnancy (%)				
Unplanned	26	18	16	481
Planned unassisted	68	65	49	1332
ART	7	18	35	219
Time to become pregnant (months) ¹				
Mean (SD)	7.1 (11.4)	13.2 (17.8)	22.4 (21.8)	
Health very good (%)	65	74	71	2032
Relationship type (%)				
No partner or dating	4	4	8	82
Cohabiting	23	38	39	479
Married	73	58	54	1236
Education (%)				
No degree or secondary school	17	14	18	339
Diploma below bachelor's level	27	22	28	538
Bachelor's degree	33	31	24	655
BA honours or postgraduate	23	33	30	500
Employed	95	98	96	1946
Income (%)				
<\$30,000	22	14	18	339
\$30,001–\$50,000	30	26	16	471
\$50,001–\$70,000	28	22	31	450
\$70,001–\$100,000	16	22	20	283
\$100,001 or more	5	17	14	118
Ethnicity (%)				
New Zealand European	59	74	71	1265
Māori	7	5	6	133
Pacific Islander	6	4	8	122
Asian	19	11	12	428
Other	4	6	3	84
n (% of total sample)	1593 (78%)	265 (13%)	174 (9%)	

Notes: ¹ If planned.

Based on total sample of 2032 first-time mothers aged 25+ years in the Growing Up in New Zealand antenatal survey.

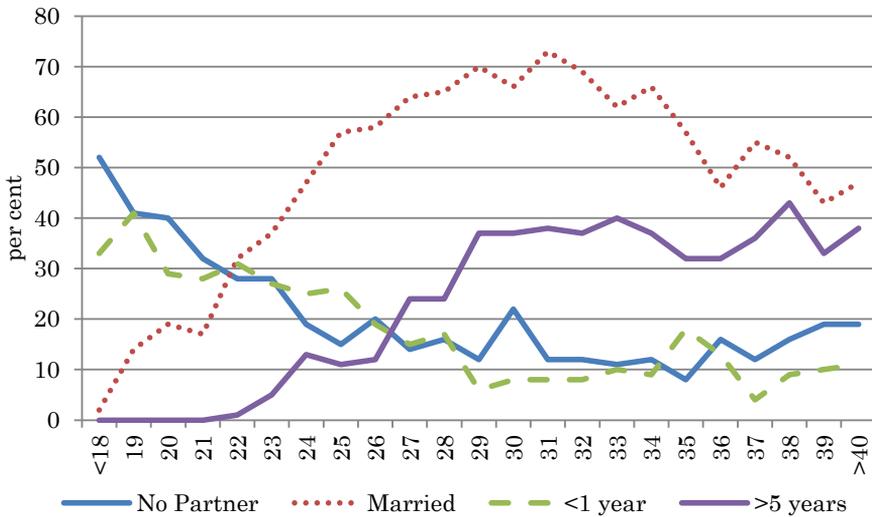
Chi-squared or ANOVA tests showed significant differences ($p < 0.001$) between the age groups for all variables.

Figure 2: Pregnancy and health of New Zealand first-time mothers by age



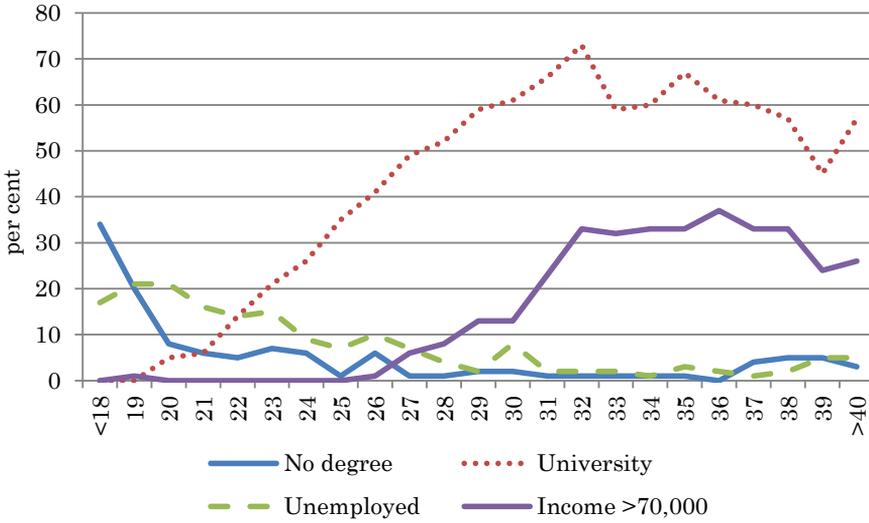
Data: 2850 first-time mothers in the Growing Up in New Zealand antenatal survey.

Figure 3: Family structure of New Zealand first-time mothers by age



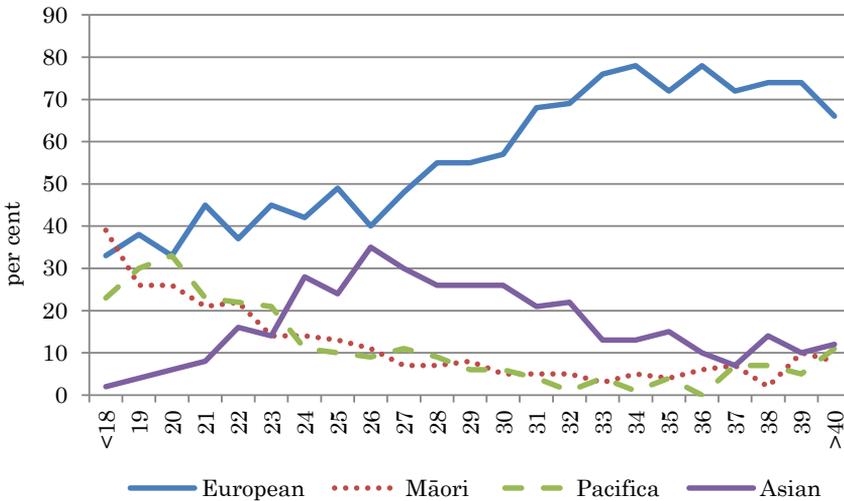
Data: 2850 first-time mothers in the Growing Up in New Zealand antenatal survey.

Figure 4: Education and income of New Zealand first-time mothers by age



Data: 2850 first-time mothers in the Growing Up in New Zealand antenatal survey.

Figure 5: Ethnicity of New Zealand first-time mothers by age



Data: 2850 first-time mothers in the Growing Up in New Zealand antenatal survey.

Table 2 presents the results from a multinomial logistic regression predicting the age of first-time mothers. The key factors associated with first-time maternal age are use of ART and relationship status. Nearly eight times more first-time mothers who had used ART were at a very advanced age (aged 38+ years) and three times more first-time mothers who had used ART were at an advanced age (35–37 years) than were in the reference category of 25–34 years. For relationship status, three times more mothers living with an unmarried partner were aged 38+ and double the mothers living with an unmarried partner were aged 35–37 than were aged 25–34. Further, four times more first-time mothers with no partner were at a very advanced age than were aged 25–34. Higher education was also a small factor, with double the mothers with an honours or postgraduate degree aged 38+ than aged 25–34.

Table 2: Multinomial logistic regression models comparing predictors of age at pregnancy

	35–37 vs 25–34			38+ vs 25–34		
	Coeff	S.E.	Odds ratio	Coeff	S.E.	Odds ratio
Pregnancy						
Unplanned	-0.34	0.20	0.71	-0.53*	0.26	0.59
Planned unassisted ¹						
ART	1.04***	0.20	2.82	2.07***	0.20	7.93
Health very good	0.19	0.16	1.21	0.17	0.19	1.19
Relationship type						
No partner / dating	0.67	0.39	1.96	1.49***	0.40	4.44
Cohabiting	0.88***	0.16	2.41	1.10***	0.20	2.99
Married ¹						
Highest qualification						
None / secondary school	-0.05	0.22	0.95	0.34	0.27	1.40
Diploma	-0.13	0.19	0.88	0.26	0.24	1.29
Bachelor's degree ¹						
BA honours / postgraduate	0.31	0.17	1.37	0.57**	0.23	1.77
Income						
<\$30,000	-1.01	0.61	0.36	-0.97	0.63	0.38
\$30,001–\$50,000	0.17	0.33	1.19	-0.37	0.44	0.69
\$50,001–\$70,000 ¹						
\$70,001–\$100,000	-0.42	0.23	0.66	-0.25	0.25	0.78
\$100,001 or more	0.01	0.18	1.01	-0.40	0.21	0.67
Ethnicity						
NZ European ¹						
Māori	-0.37	0.31	0.69	-0.23	0.35	0.80
Pacific Islander	-0.40	0.36	0.67	0.26	0.33	1.30

Asian	-0.56*	0.23	0.57	-0.36	0.27	0.70
Other	0.27	0.30	1.31	-0.51	0.49	0.60
Intercept	-2.09***	0.23		-2.92***	0.29	

Table 2: Multinomial logistic regression models comparing predictors of age at pregnancy (cont'd)

	38+ vs 35–37		
	Coeff	S.E.	Odds ratio
Pregnancy			
Unplanned	-0.19	0.31	0.83
Planned unassisted ¹			
ART	1.03***	0.24	2.81
Health very good	-0.02	0.23	0.98
Relationship type			
No partner / dating	0.82	0.51	2.27
Cohabiting	0.22	0.23	1.24
Married ¹			
Highest qualification			
None / secondary school	0.38	0.32	1.47
Diploma	0.38	0.28	1.46
Bachelor's degree ¹			
BA honours / postgraduate	0.26	0.27	1.29
Income			
<\$30,000	0.05	0.85	1.05
\$30,001–\$50,000	-0.54	0.51	0.58
\$50,001–\$70,000 ¹			
\$70,001–\$100,000	0.17	0.32	1.18
\$100,001 or more	-0.42	0.25	0.66
Ethnicity			
NZ European ¹			
Māori	0.15	0.43	1.16
Pacific Islander	0.67	0.45	1.95
Asian	0.20	0.34	1.22
Other	-0.78	0.53	0.46
Intercept	-0.82*	0.34	

Note: 2032 first-time mothers aged 25+ in the Growing Up in New Zealand antenatal survey. Pseudo $R^2 = 0.1$

¹ Reference group

*= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$

Discussion

This study provides a description of first-time mothers of advanced age in New Zealand and a first look at some of the most important factors underlying this trend. Women who have their first birth at age 35 or older generally also have high levels of education and incomes. Most plan their pregnancies, and some need assistance to become pregnant. They are in good health and stable relationships, and most identify as European-New Zealand ethnicity. Most of these characteristics are shared with all first-time mothers aged 25 or over.

Experiences distinguishing older first-time mothers are their use of assisted reproductive technology (ART) and their relationship status. Assistance in becoming pregnant was needed by more first-time mothers over 35 years, and many more of those over 38 years, than by mothers aged younger than 35 years. More mothers over 35 years were partnered with an unmarried co-resident partner than were mothers aged 25–24 years. Furthermore, first-time mothers without a partner were more likely to be aged 38 years or older than 25–34 years old. Most of these pregnancies to older mothers without partners were unplanned, with very few becoming a single mother as a result of ART. Education had a small role to play, with more first-time mothers with a postgraduate degree having a child at the oldest ages.

These women in New Zealand fit into the larger picture of the developed world where women with higher education and incomes are postponing childbearing to a later age, but are often faced with difficulty becoming pregnant when they do so. As in New Zealand, first-time mothers of advanced age in Norway and Portugal are also mainly characterised by socio-economic advantage (Guedes & Canavarro, 2014; Nilson et al., 2012). New Zealand mothers differ, however, from those in the two European countries in terms of their pregnancy planning: advanced-age mothers in Norway and Portugal were no different from the comparison group in their pregnancy planning (Guedes & Canavarro, 2014; Nilson et al., 2012), whereas in New Zealand, there were fewer unplanned pregnancies among the oldest mothers (aged 38+) than for mothers in the comparison group (aged 25–34).

This new knowledge of advanced-age mothers in New Zealand informs policymakers and medical professionals that, if the trend of

delaying parenthood continues, there will be increasing demand on assisted reproductive services. The link between an advanced degree and advanced age at childbearing is a call for supporting women's ability to have children while on a career pathway. Women and their partners appear to be heeding the message to carefully plan their childbearing, but this planning, when it leads to postponement, may have unintended consequences for couples, families and society.

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A Memory: John Caldwell

IAN POOL¹

Others will write with authority about John's, or Jack as he is known universally, academic stature and published contributions to our field; I am sure that I will concur with all those assessments. Jack was a leading figure of modern demography. He more than earned his place among that small group of highly selected modern giants of our field who figure in Demeny and McNicoll's *Encyclopedia of Population* (2003), to which he also contributed several entries. Australians should be rightly proud of his scientific record reported there by Gavin Jones, and his ranking in 2009 by the international field of population studies as the number one demographer of all time. But I would like to comment instead on other aspects of his life, about which Australians should be equally proud: (1) his mentoring of others, not just Australasians, but also Africans, Americans, Asians and others; and (2) how he gave Oceania a real place in the international demographic community, particularly in the International Union for the Scientific Study of Population (IUSSP).

I personally benefited from his mentoring. I must have been among the first to whom he gave such support, although Patrick Ohadike and Charles Ejiogu, both Nigerians who had studied under Jack at the University of Ghana, probably predated me by a few months. They did their PhDs at the Australian National University (ANU) and both went on to distinguished careers as international civil servants, mainly (but not entirely) in Africa. I first met Jack in 1961 when I was a new student at the ANU; then shortly after that initial meeting, Jack left for the Ghana post of the Population Council. Returning to Canberra, he arranged for me to follow him there and thus he played a fundamental role in setting my

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subsequent career. Patrick, Charles and I were merely the first of numerous people whom Jack supported at key stages in their academic lives, among them Peter McDonald who, in a note circulated immediately after Jack's death, also lists Australian establishment demographers as among those who benefited from Jack's mentoring.

Jack was not only president of the IUSSP, but carried into that position a particular ethos that gave a greater status to Australasia and other regions, which, to a degree, had been outside the mainstream of governance and management of the discipline internationally. The IUSSP is an organisation of individual scientists, not of country or regional associations; however, traditionally, large voting blocs had dominated its executive, a factor that was even recognised for many years in a constitutional clause that fractionated North American votes. (Thankfully, the IUSSP has got rid of that discriminatory rule). What Jack did, by demonstrating excellence and inclusiveness, was to bring Australia to the fore not only in the organisation, but also as a major player in many areas of demographic methodology and theory. Furthermore, Jack's students and ANU alumni fanned out globally to add to demography's knowledge base in many corners of the world.

Jack was also a great colleague and friend. Unlike many other eminent figures, he always had time for discussions with others – his ANU office door always seemed open in the afternoon (he had probably written 20 pages of a paper that morning before coming in for lunch). This extended to his family. I twice experienced road trips with the Caldwell clan – a sort of travelling seminar with research issues being discussed non-stop and passionately – first in 1968, as Jack drove us across the Sahel (from Burkina Faso to Niger), through a countryside reminiscent of outback New South Wales (NSW), and then many years later, in real NSW, going to visit his family in Ningan. That, for me, was the quintessential Jack: a man of great distinction, yet admirably down to earth.

Without becoming an isolated pioneer, Jack also advocated innovative ideas that frequently went against the common viewpoint, but later often became perceived wisdom. He could see the wider picture while others merely saw technical detail. I think, for example, of the response to his paper with Thomas Schindlmayr in *Population Studies* on communalities among the diverse populations with sub-replacement

fertility: their description and explanations of this, at the macro level, were very sound and very interesting, but incurred the wrath of some micro-analysts of fertility. In some commentaries, Caldwell and Schindlmayr were almost rated as apostates.

Caldwell's constant generation of new ideas had a flow-on effect as a catalyst for the development of demography in Aotearoa New Zealand. His strategy was to integrate visiting New Zealand scholars or students into ongoing areas of interest, and this then enriched New Zealand's demography as these researchers returned and spread their knowledge. I can think immediately of two examples, although there were others, too. The first is Ted Douglas's seminal chapter 'The new net goes fishing' in a book Jack generated and edited: *The Persistence of High Fertility*.¹ The chapter is still highly resonant as it explores the cultural determinants of Māori fertility patterns. Secondly, Andrew Trlin's major contribution to the analysis of health transitions came after a visit to the ANU, and culminated in the body of research he choreographed and commissioned: *Social Dimensions of Health and Disease: New Zealand Perspectives*.²

Jack also represented his country at international fora – one thinks of the U.N. International Conferences in Mexico City (1984) and Cairo (1994). His role as a delegate was always distinguished, although sometimes in ways that may not have pleased the self-important diplomats who try to control such delegations that include 'lay' people. At Mexico, there was a vituperative debate and vote that, because of the obdurate position of the US delegation representing the Reagan White House, saw the US and one or two allies outvoted by the remainder of the Western countries, the Soviet Bloc and the Third World. Following this, Jack was confronted by a TV crew (Australia was in the front row), which he assumed to be Mexican. He said, in typically direct fashion, "This has nothing to do with this conference, but with the Republican Party convention in Dallas next week." It turned out to be a major US Channel, and Jack was featured on 6 p.m. prime-time news in the US, where he was seen by most American demographers – who strongly applauded his comment. I do not know what the diplomats thought.

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Book Review:
**Colonisation and development in New Zealand
between 1769 and 1900: The seeds of Rangiatea**

By Ian Pool
Springer (2015)
335 pages, and eBook

LEN SMITH *

Building on his landmark earlier research on Māori demography, Ian Pool, Professor Emeritus at the National Institute of Demographic and Economic Analysis at the University of Waikato, has produced an ambitious and complex contribution to the burgeoning field of colonial studies that incorporate the perspective of the colonised. He sets the story of the colonisation of Māori up to the end of the Victorian era within a context – population and development – more familiarly associated with this the second Elizabethan era, drawing on the paradigms of the demographic, epidemiological and health “transitions”, and the factors that facilitate, impede or “block” them.

This translation of 20th century paradigms to 19th century colonialism can only be partial. In contrast to the sometimes anodyne narratives of development studies, the story of colonisation cannot be separated from militarised mercantile imperialism, armed resource expropriation, and the deliberate destruction of indigenous economies, societies, cultures or peoples in furtherance of the imperial and colonial projects.

Pool acknowledges this wider context, pointing out that the 18th century enclosures and clearances of the “Celtic fringe” in Britain and Ireland provided the model for the Māori disposessions and displacements, and highlighting parallels with more recent imperial

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adventures. The proto-colonial activities of the New Zealand Company and the Wakefield land “purchases” were manifestations of a process familiar to this day: grand resource schemes promulgated by elites in a favourable legal environment crafted by influence resort to the most transparently quasi-legal devices, direct extra-legal action undertaken with impunity, and the mobilisation of state (and non-state) force as the final bulwark. Meanwhile the Colonial Office as nominal regulator, the Churches, other civil society bodies and intellectuals are limited to the roles of bystanders, moderators, apologists or even collaborators.

There are no surprises in the factors responsible for the Māori population and economic declines: warfare, disease, resource expropriation and displacement. Pool is at pains to acknowledge that some of the destructive forces – especially disease epidemics – were unintended. But the story he tells is overwhelmingly one of *intended* consequences – of transparently contrived land sales, of unequal treaties, of colonial overreach, and of the punitive confiscation of land, water and other resources even from Māori allies of the colonial state.

And yet, despite the overwhelming significance of resource expropriation in the Māori economic decline, Pool concludes that both the demographic decline and nascent recovery were primarily a result not of social or economic factors, but of the initial lack and subsequent development of population resistance to introduced pathogens, which impacted on both fertility and mortality. This does not sit particularly comfortably with transition theory, but it follows an inexorable logic: the population decline was halted during a period when the Māori economy and living standards were actually worsening, and the population recovery began just after the end of the Victorian era, predated by half a century of Māori economic and social resurgence. Severe as it was, the Māori population decline was far less drastic than the depopulation in Australia or North America, where the colonisation epidemics were followed up by unrelenting persecution and large-scale population displacement associated with the imposition of reservation regimes.

Pool brings us back to the transitions by arguing that the effect of expropriation was to block the transitions that would otherwise have occurred. In spite of its historicist overtones, blocking is an apt description. At the beginning of the colonial era, despite the disruption of the musket wars and the depredations of the taua (war parties), some Māori groups

were adapting rapidly to the new circumstances, and their economies were buoyant. Māori ships were plying coastal and international routes, and commercial horticulture was thriving. This rapid economic adaptation was followed by deliberate destruction and confiscation following the Māori Wars and their sequelae in the Native Land Courts, as the bulk of the land was taken over for grazing, communal holdings were broken up, and due process became a means of destroying the Māori economy. Under these circumstances, although the population decline had ceased, it remained stationary for the balance of the 19th century.

Pool paints on a very broad canvas, but he acknowledges that other perspectives, such as economic anthropology, are missing and need to be brought into the narrative. We are still struggling towards a dialectical historiography that can yield a balanced political economy of colonisation, synthesising the population, social, cultural, political and economic history on both sides of the frontier. Among the many asymmetries is the availability of information, but as the proceedings of the Waitangi Tribunal have shown, this challenge can be addressed, both by making full use of Māori sources, and by mining the records of the colonial state for the insights they can provide on the other side of the frontier. The book demonstrates just how much can be achieved by doing so.

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ISSN 0111-199X (Print)
ISSN 1179-8149 (Online)